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ABSTRACTS FROM SOME OF THE RECENT LITERATURE ON LEPROSY.

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All of us who are engaged in the study and practice of medicine in China must be fascinated by the number of problems in pathology, diagnosis, and treatment, which are constantly presenting themselves to us. Almost daily we see cases which at first seem to baffle us. The history given by the patient and his friends is probably false and apt to lead us astray, and the symptoms are aggravated by native treatment to such an extent that it is often difficult to decide how far we are dealing with the disease itself and how far with the results of improper treatment. Moreover, it may be that the disease is one unknown in Western lands, and which we come across for the first time in our out-patient clinic.

It is the very difficulty of the case, which stimulates us to special effort. No one willingly admits defeat. For the patient's sake and for our own, for the sake of the reputation of our hospital and Western medicine generally, we seek to grapple with it.

Among the many diseases which thus thwart us in our endeavours there is perhaps none which offers greater difficulties than leprosy. We have the problems of cultivation of the bacillus and of its inoculation and, what is most important from the patient's point of view, no one has yet discovered a remedy which has satisfactorily withstood the test of time and experience.

For us who are working in China there is no lack of material for observation. Probably each of us sees at least one or two cases a week. But unless we have accommodation specially set apart for leper work, how hopeless we feel. We all know that a Chinaman, when he is
sick, demands an immediate result from treatment, no matter how long he may have been suffering from the disease. If he does not feel marked improvement from the first bottle of medicine we seldom see him again. Many lepers come merely for a diagnosis. They have been to their native physicians, some of whom say that it is the dread disease, and as many others say it is merely an eczema or some other trivial condition which they undertake to cure. At last, in desperation, they come to the foreigner for a final opinion. I well remember one such case, when I had only been on the field a short time. When I informed him that he undoubtedly had leprosy, he told me that when he got home he meant to take an overdose of opium to finish himself off.

Personally I have had no opportunity of following up my cases, so that I cannot claim originality for this paper. What I have done is to try and collect a few items from the recent literature on the subject, which may be of some interest to the members of this association.

BACTERIOLOGY.

It is now firmly established that the lepra-bacillus of Hansen is the specific cause of leprosy. The fact that it occurs universally in leprosy in all its forms, that all the symptoms of leprosy can be explained as the direct or indirect result of a pathological process produced by it, that it is absent in all other morbid entities, and that it possesses characteristics which differentiate it from all other micro-organisms, render its position as the leprosy-exciter as unassailable as the plasmodium of malaria.

Cultivation.—In spite of the numerous attempts which have been made during the last decade to cultivate the bacillus, no medium has been discovered on which it will invariably grow. From time to time observers have announced that they have succeeded in cultivating it, but further experiments by themselves or others have usually failed to establish their claim and showed that either the technique was defective, that the cultivations had become contaminated, or that some other acid-fast micro-organism, like the tubercle bacillus, had been grown.

Perhaps one of the most interesting experiments was that of Emile Weil, who inoculated leprous material into a hen's egg as follows:—The juice from a recent nodule was taken up by a pipette. This was introduced into the yolk after piercing the broad end of the egg. The small hole was afterwards closed up by a collodion scab,
and the egg incubated at 37°. The yolk was then turned out on a petri-dish and in it a small yellowish nodule about the size of a hemp seed was observed, which proved to be a colony of lepra bacilli. This result was obtained twice out of twenty-six eggs inoculated.

Up to the present, it has not been proved that the bacillus can lead a saprophytic existence on decayed organic matter such as decayed fish, meat, rice, or in the soil. If the bacillus could lead such a saprophytic existence, there should be no difficulty in finding a suitable medium for its growth. This fact alone is sufficient to negative the theory that the disease may result from the eating of decayed fish, decayed pork, and the like, and until either the lepra bacillus has been found to exist in decayed fish and to be capable of being recognized there, the fish theory of the etiology of leprosy cannot be regarded as other than a hypothesis which is unsupported by scientific fact.

In the Journal of the London School of Tropical Medicine for December, 1911, there appears a most interesting paper by Dr. Bayon on "Acid-fast and acid-resisting germs cultivated from cases of human leprosy and their determination." The experiments, into which I have not time to go, are of a most thorough and exhaustive nature. Everything possible is done to avoid error, and the differentiation from other organisms is most carefully carried out. In conclusion he says: "My results are the following:—From a case placed at my disposal at the London School of Tropical Medicine, I succeeded in cultivating on two separate occasions an organism which became acid-fast on being injected into mice and rats. I regained the germ in pure culture; succeeded in proving it was not tubercle—human, bovine, or avian—and not smegma. I distinguished it by cultural methods from nineteen other acid-fast organisms. By injecting this germ, I produced in rats the identical changes of spontaneous leprosy of the rat and analogous to lesions of leprosy in the human being. Leprosy was transmitted directly to the rat from the human being, definitely proving that the disease is contagious."

MODE OF INVASION.

The path of entrance of the lepra bacillus is a point of importance with regard to the prophylaxis of the disease, but it is still sub judice. It would seem most probable that the bacillus may gain entrance in various ways.

Probably the most common mode of invasion is via the nasal mucosa and upper respiratory tract. This view is corroborated by the fre-
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quency with which nasal symptoms form one of the earliest manifestations of the disease, such as rhinitis, chronic coryza, ozsena, lepromata in the nasal mucosa, and the presence of lepra-bacilli in the nasal discharge.

The lepra-bacilli may also gain entrance via the mouth and infect the tonsils, and they have been found in the sputum.

With regard to the alimentary tract being a path of infection the evidence at the present time is less conclusive. Nothing suggestive of an initial lesion producing definite symptoms has been located there, nor has the bacillus been found in food stuffs except in the human milk.

The invasion of the bacilli may take place through the skin, specially when this has been abraded by traumatism, or its resistance lowered by some form of dermatitis.

The genital organs may also be the means by which the bacillus gains entrance, and in this case the infection probably takes place from lepromata situated on the penis or in the vagina.

Although the testicles are frequently involved, there is no distinct evidence of infection from the semen. Congenital leprosy has not been proved to occur and in this the disease shows a distinct parallelism with tuberculosis, for infants of leprous parents are not born with leprosy, but may become infected subsequently as a result of a hereditary weakness or predisposition and an existence in an environment, in which contagion is liable to occur.

The Infecting Agent.—In 1900 the possibility of transmission by blood-sucking insects was first considered. Palm expressed the opinion that it was transmitted by the ordinary body-louse, but he adduced no evidence either clinical or experimental. Scott, from his experience in the Sandwich Isles and Madeira, believed that mosquitoes acted as carriers. Noc found some bacilli in mosquitoes. Cazamian also attributed its spread to mosquitoes. In 1901 Joly, in Madagascar, thought that mosquitoes were not responsible or Europeans would suffer more than natives instead of less, but that flies were more likely to transmit the disease by infecting wounds and mucous surfaces. Dr. E. P. Minett, Assistant Government Bacteriologist, British Guiana, in a recent paper entitled: “The Question of Flies as Leprosy Carriers,” describes the following interesting experiments, which he made. He says: “With a view to showing if possible, that the leprosy bacillus is carried about by the common housefly, a number of flies were captured at the Leper Asylum, Mahaica, British Guiana, on two occasions. These flies were kept in a sterile bottle for several days and were then allowed to feed on the ulcerated patches present on several lepers for a short time before
returning to the sterile bottle. They were then kept for a period of 3 days before examination. The method I adopted was as follows:—

The flies were first killed with chloroform vapour. Each fly was then placed in a thin sterile test tube containing 4 c.cm of sterile salt solution. They were allowed to soak in this for 48 hours with frequent shakings, care being taken not to detach legs or wings. At the end of this period the fly was removed and the saline placed for 5 minutes in a high speed electric centrifuge. The supernatant fluid was carefully drawn off with a pipette, and the deposit placed on a sterile glass slide and allowed to evaporate in the air, covered by a watch glass. This was then stained with Ziehl Nielsen's differential stain and examined for the presence of bacilli. In this manner, of 30 flies examined, in one instance leprosy bacilli were detected.

The same flies were then placed in fresh sterile test-tubes and their intestines teased out by means of sterile platinum needles, care being taken to break up the intestine itself and to express the faeces. Four c. cm. of sterile saline solution was then added to each tube, which was allowed to stand for 24 hours with frequent shakings. At the end of this period the fragments of fly were removed by means of platinum loops, the fluid centrifuged, and the deposit dried, stained, and examined as before. Of 30 specimens examined in this manner, 4 specimens contained well-formed leprosy bacilli and one specimen showed their presence in a very degenerated form.

From these experiments it would seem that flies must certainly be reckoned with as possible factors in the dissemination of leprosy, if only as mechanical carriers.

The fact that undegenerated leprosy bacilli showing no evidences of destruction were detected in the fly's intestine after a period of 3 days would seem to point to the conclusion that the waxy coating present on these bacilli is extremely resistant to the gastric juices, and that the organisms are presumably capable of conveying the infection to a healthy person if planted on a suitable medium, such as the serum present on a cut or ulcer.

With a view to testing the possibility of leprosy infection by means of flies' faeces, I obtained 30 flies of the ordinary non-biting Muscidæ variety. These were placed in sterile glass roll culture tubes, plugged with cotton wool. They were kept 48 hours without food and then fed on the serum, known to be rich in bacilli exuded from a freshly cut leprotic nodule. This was effected by making a fairly deep cut in a suitable nodule, scraping the sides, and then placing the mouth of the tube containing the flies over it. It was found that the flies fed on the
serum and blood readily. They were allowed to feed in this manner twice daily for 7 consecutive days. At the end of this period the flies were killed with chloroform vapour and shaken out of the tubes. Ten c. cm. of sterile saline solution 0.75% was placed in each tube and the faeces thoroughly shaken up and allowed to remain for 24 hours to soak, then shaken up again, the saline centrifuged in sterile tubes and the deposit collected on slides, dried, and stained as before. In order to concentrate the deposit the saline obtained from 5 flies was mixed, making a total of 6 slides.

"On examination the results were as follows:—

2 slides showed many typical bacilli present.
2 slides showed many typical bacilli, also a large number of bacilli showing well marked granular destruction;
1 slide showed well marked granules but no typical bacilli.
1 slide was negative.

"With the object of confirming my former experiments, I placed 10 flies in each of 4 sterile glass jars, covered with mosquito netting. The flies were then fed daily for 2 weeks on serum from a leprotic nodule. At the end of this period they were removed and examined both externally and internally for the presence of leprosy bacilli. These were found to be present. The sterile bottles were then carefully washed out with saline fluid and the faeces only examined for bacilli. In all 4 cases large numbers of leprosy bacilli were detected, showing no evidence whatever of degeneration.

"As the bottles were examined 3 days after removal of the flies themselves, I regard this as most important, showing as it does that leprosy bacilli can be detected in a practically unchanged state in flies' faeces after a period of several days and most probably longer."

Dr. Minett goes on to describe experiments in which he attempted to cause infection but says: "Unfortunately I am not able to definitely prove the lepra bacilli present in the flies' faeces to be capable of causing infection.

"In any case, the best prophylaxis is a rigorous campaign against the possible breeding places of flies and, fortunately, as leper asylums are usually surrounded by a considerable extent of ground, it is more than probable that most of the flies are home grown and their breeding places capable of being sought for and destroyed."

TREATMENT.

There are probably but few drugs of any repute which have not at some time or other been employed in the attempt to stamp out this dread disease. Carbolic acid, creosote, arsenic in its various prepara-
tions, mercury, iodine, potassium iodide, sodium salicylate, and numerous other drugs have all been given thorough trials, but none have been proved efficacious. Serum methods have also proved unsuccessful.

Of the many oils which have been employed, there is one which has undoubtedly met with a certain measure of success, i.e., chaulmoogra oil. Dr. K. S. Wise in writing of its use in the leper asylums of British Guiana says: "It was widely used by Hillis who writes that for satisfactory results with this oil the disease should be recent, the patient's health good, untainted by scurvy or syphilis, and that the disease be not hereditarily acquired. Further, the tuberculated are most amenable, the mixed cases next, and the non-tuberculated the least amenable of all. A dose of 10 minims in emulsion and milk or sometimes castor oil was given internally, while externally a liniment of one part chaulmoogra oil and 15 of sweet oil was used.

Carter, in his work, "Leprosy and Elephantiasis," reports that under its continued use the skin becomes soft and supple, the discoloration vanishes, the different morbid sensations leave the patient, the mental hebetude passes away, sensibility is completely or partially restored, the ulcers heal and cicatrize, through prone to break out again. Having, however, advanced favourably to a certain degree, most cases become stationary. No cure seems to have been effected."

I think the foregoing remarks with regard to chaulmoogra oil pretty fairly represent the opinion of the medical profession at the present time, and it would seem that sooner or later after further research and experiment some substance with chaulmoogra oil as its basis will probably supply the long-looked-for remedy.

Nastin, which was first introduced by Professor Deycke in 1908, held the field for some time and great things were hoped for from its employment. But the most recent report, which is reviewed in a leading article in the Lancet for March 30th, 1912, is far from satisfactory. The writer says: "Some cases of the disease improve unaccountably for a time without having been submitted to any method of treatment, and it is a well recognized fact, that the mere removal of a leper from his squalid and filthy home to the better hygienic surroundings of a hospital or asylum often produces for a time at least, a marked improvement in his state of health . . . . . . . When with his knowledge and consent a leprous patient is placed under treatment by a new remedy, his mental attitude seems to be stimulated by the renewed hope of recovery inspired by the new drug, and he is seemingly apt to exaggerate unconsciously his own feelings and to express himself as being much benefited, at the same time devoting himself to his
work with greater zest and alacrity. At the February meeting of the Society of Tropical Medicine in London, Professor Deycke read a paper on the treatment of leprosy by his method and the results so far obtained by it. In the statistics which he brought forward he dealt with 529 cases, which had been treated by 69 different medical men in different parts of the world . . . . Of the 529 cases, 13 were reported cured, 34 nearly cured, 131 considerably improved and 154 as improved, a total of 332 or 62.76% in which beneficial results were attributed to the method of treatment.

"When nastin was first brought forward, some difficulty was experienced in finding sufficient opportunities for trying its effect on any large scale and repeated applications were made by Professor Deycke and his supporters to the British authorities, to have the remedy tested in one or other of the colonies where leprosy was prevalent. Ultimately the Colonial Office agreed to allow Professor Deycke to test nastin in the public leper asylum at Mahaica in British Guiana, the work to be carried out in cooperation with the colonial medical officers . . . .

"Last year Dr. Wise presented a report to the Colonial Office, showing the results achieved in the 135 lepers who had received the treatment between December 1908 and September 1910. Dr. Wise reported that a few seemed to have improved considerably, that some were worse and that the majority remained in statu quo. He added that since the favorable results were so few, a longer and wider experience could alone determine whether the successful cases were merely instances of natural improvement irrespective of the nastin treatment, or were on the other hand really due to the action of that remedy alone."

In a further report of cases in the same institution, treated from September 1910—September 1911, we read the following: "The report deals with 3 groups of cases, 24 cases being treated with nastin, 71 with benzoyl chloride, and 8 receiving no medical treatment at all. Dr. Minett appears to have no hesitation in arriving at his conclusions. He regards nastin as being apparently of little value in cases of leprosy. The results obtained in the leper asylum at Mahaica appear to be very different from those reported to Professor Deycke by the 69 medical practitioners already mentioned . . . . With this conflicting evidence before us it is not easy to arrive at a definite conclusion, but in the circumstances we think we are justified in saying that up to the present the evidence put forward in favour of nastin is hardly convincing enough to lead to its general acceptance. Further observation and experience seem to be required before a correct opinion regarding it can be reached."
In bringing this paper to a conclusion, I should like to briefly mention a treatment which is at present being given a trial at the small leper colony connected with our own Mission at Wuchow. In reply to some questions which I sent to him asking for information, Mr. Anderson replied as follows:

"You will see from the enclosed, that the remedy is on the basis of chaulmoogra oil. Delord found a digestive, which he called Aiouni, which, in the language of the South Sea Islands, means 'hope.' This evidently enables the patient to assimilate the oil."

Delord's directions as to the use of Aiouni and its method of administration are as follows:

First, let nobody be discouraged!

If the sickness has prevailed for years, the treatment will take the longer time.
The state of hundreds of lepers has been improved and transformed, so that after a few months of treatment several have declared themselves healed; you may also be transformed and healed in the same way.

The following prescriptions are then necessary:
1. The leper should be placed under the most favourable circumstances as to his body's welfare and his life in general, so that he may enjoy life again.
2. A healthy and strengthening food, though without altering his diet and using many additional dishes.
3. Life in the open air as much as weather and circumstances will allow. Some activity but without going so far as tiring the sick.
4. Frequent bathing—hot if possible—and the use of black antiseptic soap, in order that no impurity whatever should remain on the body. Sea bathing can only be recommended if there is no wound existing, and a fresh-water bath should then follow at once. Directly after the bath, reaction must be brought about through friction and warm clothing.
5. The greatest cleanliness must be observed in the clothing as well as in the dwelling. It is also advisable that lepers should consent—in their own and others' interest—to remain more or less isolated, specially at the beginning of the treatment.
6. The medicine "Aiouni" must be taken as much as possible fasting, in the morning, before the first meal. The lines on the graduated glass indicate:

- The sufficient dose for very young children (5 gr.).
- The necessary dose for children from 7-12 (10 gr.).
- The normal dose for an adult (15 gr.).
- This dose is to be tried, if No. 3 is of no effect, and if the constitution is strong enough to bear it without tiring the digestive organs (20 gr.).

7. When the medicine is absorbed, take one or two tablets (Aiouni) which will lessen the taste of the oil and will help its digestion. One may also rinse the mouth with fruit or acidulous liquids, also with tea or coffee, and then take the meal.

Above all, continue the treatment regularly till all external signs of leprosy have disappeared and the general state of health is considered as being the same as previous to the illness. And then continue to live a healthy and normal life, taking nourishing food and keeping to extreme cleanliness. From time to time—every three months, for instance,—make a fresh cure of a fortnight.

These are the rules to be followed. The results have been such, that we do not hesitate to recommend the above treatment to all who suffer and get discouraged—victims of one of the most awful illnesses: leprosy.

N. B.—The effect of the medicine often produces an eruption of the skin with peculiar itching. Scratching is to be avoided; these itchings only last a few days. If there should be wounds, it would be well to bind them up after each bath, either with very clean linen, or some hydrophilic gauze.
Mr. Anderson continues his letter as follows:—

"We have tried the remedy for about 8 months on 2 cases. One an advanced case, the other an early case. Unfortunately either Dr. Hadden or I have mislaid the notes on the latter case. As far as I can remember, there is marked improvement from what he was, and the signs of leprosy are very few indeed. It was an anaesthetic case. It is quite safe to say that the progress of the disease is apparently stayed.

In the first and more advanced case, Dr. Rees saw him and compared his condition with that when examined by Dr. Hadden. Dr. Rees writes: ‘There is apparently some improvement since July 28th, 1911. This is especially noticeable in the case of the left arm. Instead of dried scabs over the point of the elbow, there is a healed scar. The dry ulcer at the junction of the middle and lower ½ of ulna is also replaced by a scar. Ditto the small moist ulcer over the region of the Pisiform. There is opposition possible between the thumb and little finger. No actual discharging ulcers observed on arms.’

Delord makes no claim to heal, but he says that he has had many cases of apparently complete cure, so that the lepers have returned to their villages and to their normal life.

The remedy is obtainable from Alf. Cousin, Chemist, Lausanne, Switzerland. Each bottle costs 5 francs, containing sufficient medicine for one month's treatment.

Even though no complete cure is effected, if the progress of the disease is stayed, I think that is a great achievement and shows that we are on the right lines. In this sense the experiment has proved successful, for both the lepers say that, in themselves, they feel much better.”

A STUDY OF PLAGUE.

By P. J. Todd, M.D., Canton.

In writing a paper on Plague I wish to begin by saying I can only give you a little that is original. While I have seen and treated more or less plague during the last ten years, others have spent far more time in the study of this disease, and it would be much more profitable to all for me to collect the practical points from their investigations, adding what little I can to them rather than try and write an entirely original paper.

W. J. Simpson in 'A Treatise on Plague,' published 1905, gives the following definition: Plague, in the modern acceptance of the term, is a specific and infectious disease affecting man and some of the lower animals, possessing certain definite and well marked symptoms which are always more or less present in every outbreak. These symptoms in man are fever, severe headache, giddiness, congested eyes, extreme mental depression, stammering, incoördination
of the voluntary muscles when called on to act, staggering gait and bodily weakness, accompanied by painful swellings, with effusions into the surrounding tissues, in the groin, armpit, neck, or in other regions of the lymphatic glandular system, and with an occasional eruption on the skin of so-called carbuncles or pustules. They end in death in a large percentage of cases in the course of three to five days, or even in a shorter period. The swellings or buboes which are so characteristic of the disease, and which contain a special microorganism recognized by its bi-polar staining, may be absent in a varying proportion of cases. In the pneumonic variety of plague, which primarily attacks the lungs, there are no buboes, or only a late development of them as secondary manifestations of the disease. In the fulminating or septicæmic plague, which is another rapidly fatal variety, there are seldom any buboes to be detected. Plague may be therefore with buboes or without buboes. This fact has always rendered the diagnosis of plague very difficult and uncertain in the early stages of an epidemic, though, as the epidemic develops, the types without buboes may be recognized clinically, especially the pneumonic type with its fever, spitting of blood, and great prostration. Even the laity who have seen much of plague are able to distinguish this form in its most severe manifestations. Since the discovery of the plague bacillus both the pneumonic and septicæmic types can be as readily recognized as the bubonic by the tests which bacteriology has recently placed in the hands of the physician. The sputum of the one type and the blood of the other contain the plague bacillus.

Accompanying or preceding plague in man there is usually an outbreak among the lower animals, particularly among rodents such as rats and mice. In these the same micro-organism is to be found as in man and is the causal agent of the disease. This causal agent is transportable from place to place, carried by infected persons or animals, or by articles soiled by the infection, and may thus set up in a fresh centre plague which may manifest itself in a sporadic, epidemic, or pandemic form and may assume a mild or virulent type."

I would add to this that the first symptom is often a chill, and during the first day there is with the headache also aching of the bones, and nausea with vomiting. The fever in severe cases of plague goes up to 104 degrees, 105, or even to 106, and at the end of the second day or the beginning of the third it will begin to drop until it gets down to 102 or 103. By the end of the third day or on the fourth day it will go back up to 105 or 106, when on the fourth or fifth day the patient dies.
In mild cases right at the beginning or near the end of an epidemic many of the above symptoms are absent.

Simpson tells us that 'however uncertain may be the nature of the majority of pestilences of a bygone age it is certain that plague is a disease of great antiquity. for occasionally in some of the oldest records the description is sufficiently explicit to remove all doubt of the disease being plague.'

"The Levant and the countries adjoining have been the centres of plague for at least 3,000 years, the first notice of the disease being in Syria. Plague is mentioned in the Bible as recurring centuries before the Christian era in the land of the Philistines, having broken out in Canaan during the military operations against the Israelites. The inhabitants of the cities of Ashdod, Gath, and Ekron, as well as those of Beth-Shemish were attacked with emrods or tumours in their secret parts, the pestilence causing a deadly destruction. It is related that in Beth-Shemish over 50,000 persons died.

"Even at that distant date the disease was observed to be accompanied by an epizootic among mice, for it is recorded that in order that the plague might be stayed the Philistines made propitiatory offerings to the Lord of Israel, of golden images of their tumours and golden images of their mice that marred the land.

"On another occasion the retreat from Pelusium of Sennacherib's army is attributed to a pestilence in which field mice are stated to have played an important part, and in commemoration of the event, according to Herodotus, a stone statue of Sethon stands in the temple of Venus with a mouse in his hand, with the following inscription: 'Whoever looks on me let him revere the gods.'

"There are earlier references in which the Israelites are threatened with the botch of Egypt and with emrods, the disease being apparently well known. Hypocrates gives no description of the disease. He, however, states that all fevers complicated with buboes are bad except ephemerals, which may possibly be considered as evidence that he was acquainted with plague.'

The first well authenticated pandemic of plague is recorded to have originated at Palusium in the year 542 B.C. From here it spread to Constantinople, and Procopius in writing of this says: 'About the same time arose a pestilence which all but entirely destroyed the whole human race.'

The second recorded pandemic, the "Black Death" in Europe of the 14th century, was an epidemic or a pandemic, the like of which for destructiveness there are no historical records.
In India during the year 1904 one million and forty thousand four hundred and twenty-nine people died of plague.

Figures, or a short paper, can give a very inadequate representation of the misery which plague has brought and is continuing to bring to the different countries of the world. To bring it nearer home, since January 1st this year 1,710 people have died of plague at Hongkong. It was so bad at Macao that large numbers of Chinese were parading the streets at night with torches and lanterns, beating gongs, shooting firecrackers and so forth to drive the evil spirits from their midst. Canton was less afflicted this year, but still there were several hundred cases there as there were also in many villages about Canton.

ETIOLOGY OF PLAGUE:

From "The Bacteriology and Pathology of Oriental Plague" by E. Klein, published 1906, I take the following: "The literature of plague—from the earliest historical periods, when the disease was recognized to be a communicable disease, down to 1894, that is, down to the outbreak of plague in Hongkong—contains a number of suggestions and assumptions as to the causation of the disease. But as is the case with other communicable diseases, before the discovery of the actual contagion, no scientific distinction was or could be made between the primary or essential cause, and those secondary conditions with which favour, infection: terrestrial influences, peculiar atmospheric states, social defects, famine and want, crowded and ill-ventilated habitations, decomposing corpses, decomposed, insufficient, and unclean foodstuffs, and a number of other conditions which are apt to weaken and to influence in an unfavourable sense the resistance of the individual; that is to say, all conditions which in most infectious diseases play a part in facilitating and enhancing inspection were formerly considered as being of the nature of essentials. The discovery of the bacillus pestis, however, as the true essence of the contagion, relegated all the above states to their proper place, viz., as being of the nature of secondary causes, and therefore of secondary importance.

"Yersin and Kitasato showed that in all cases of bubonic plague the buboes, the spleen (and also the blood) contain in very large numbers minute bacilli, which in morphological and cultural respects possess definite characters; that a trace of the microbe inoculated into a rodent causes invariably the typical acute fatal disease, bubonic plague, with some copious multiplication of the same bacillus. These statements are easy of verification, and there can therefore
remain no doubt that all postulates which a microbe has to fulfil in order to be regarded as specifically the cause causans has been complied with in the case of the b. pestis. Moreover, the numerous cases of plague in man which, from time to time, have come under the notice of a large number of observers in various countries in which plague has appeared since 1894, and the numerous rats dead in plague-stricken countries that have been subjected to bacteriological examination, have all yielded the same result, viz., the inflamed lymph glands, the spleen and other organs teeming with the b. pestis. This bacillus, as will be shown, is a well characterized species in morphology, in culture, and by experiment—so much so, that it has become an established fact that the identification in the glands, spleen, or other organs of any body is proof positive that that body is subject to and affected with Oriental plague.

"The most common form, as admitted on all sides, is the bubonic form, that is the one associated with conspicuous swelling and inflammation of the lymph glands, with edema, hemorrhage, and inflammation of the subcutaneous tissue around the glands; both together forming a painful, large, more or less soft bubo. Whether the bubo occurs in the neck, the axilla, the inguinal or femoral region, in all instances the glands show a hemorrhage in their substance with partially necrotized foci. A droplet of the gland juice, as also, but to a less degree, of the surrounding inflamed cellular tissue, shows in film specimen a conspicuously large number of b. pestis. The great number of bacilli, possessing the same character, aspect, staining power, and size, is alone sufficient to make diagnosis of plague highly probable, for there is no other acute disease known except plague which so affects the lymph glands, containing such vast numbers of this kind of bacilli, viz., non-motile, Gram-negative, and bipolar in staining, that is a vacuole in the centre, or possessing a vacuole in one or both ends, and then appearing as if gnawed out at one or both ends. Unfortunately there are cases of bubonic plague in which a film specimen made of a droplet of the juice of the bubo of the living does not show great numbers of the b. pestis. This is, however, the exception, and is, in most instances, explicable by the fact that the material is not derived from the interior of the gland, for when such glands after post mortem are dissected out and examined in film specimens, there is no difficulty in ascertaining that the b. pestis are really present in enormous numbers in the gland tissue; in fact, such film specimens show that the gland tissue is densely packed with them.
While, then, in the acute cases, the microscopic examination of the bubo material enables one to make the preliminary diagnosis 'plague most probable', it is not so in the chronic cases—that is in pestis minor—or in ambulating plague, when the buboes suppurate and become converted into open discharging sores, for here the material in microscopic specimens may, and generally does, show a variety of microbes. (a) Foremost among these one finds cocci, which by culture are shown to be either staphylococcus, albus, or aureus; they are Gram-positive; (b) next one finds streptococci; they are Gram-positive; these are less common; (c) here and there a diphtheroid bacillus, Gram-positive, which by culture is shown to belong to the xerosis group; (d) bacilli with round ends, and showing on staining more or less distinct bipolar character; these may be b. proteus, b. coli, or b. pestis, all being Gram-negative. The culture test, however—surface agar plates at 37 degrees C. incubated—shows already in 24 hours the differentiation in a marked manner.

Sections through the inflamed glands show, on microscopic examination, the following conditions:—The tissue around the gland is highly edematous, some lymph vessels contain leucocytes, red blood corpuscles, and numerous b. pestis; the veins and capillaries are distended and filled with coagulated blood; amongst the blood corpuscles are numerous b. pestis. The afferent lymph vessels are filled with coagulated lymph—leucocytes and fibrin—and crowds of b. pestis, some of the vessels showing thrombi almost entirely composed of b. pestis. The cortical sinuses are distended and densely packed with b. pestis, so are many of the medullary lymph sinuses, besides containing blood corpuscles; the lymphatic tissues of the cortical and medullary portions contain a large amount of extravasated blood; in many parts the lymph tissue is broken down, necrotic, and not easily stained; numerous b. pestis are found in it. The efferent lymph vessels are distended by, and filled with, coagulated lymph, numerous blood corpuscles, and masses of b. pestis. The blood of the peripheral circulation in an acute case of bubonic plague contains very few b. pestis. A few hours before death they can be recognized already in film specimens, though on making a puncture (plate or tube) with a drop of the blood at this stage, numerous colonies appear; but in the early stages they are difficult to find either in films or by culture, unless the blood is derived from the skin over or about the buboes.

The lungs and kidneys, after post mortem, show the plague bacilli, in proportion to their distribution and presence in the general circulation.
The liver, and particularly the spleen, are the organs which, next to the bubo, contain b. pestis in great numbers. Sections show that they are chiefly present in the spleen pulp; in this the blood spaces are distended by blood in stasis with crowds of b. pestis; in many places these occur in continuous masses, and are arranged more or less in reticulated fashion corresponding to the blood spaces and small veins; the pulp tissue itself around between these masses is in a state of necrosis."

**SEPTICÆMIC PLAGUE.**

Just as in the acute form of plague caused by inoculation of animals—which is almost always of the septicæmic type—so also in the septicæmic plague in man, the b. pestis are copiously distributed throughout all the organs, notably in the blood vessels. Amongst these organs, the spleen, lungs, kidneys, and suprarenals, as also the liver and intestines, show conspicuous changes. These consist essentially in capillary hemorrhages with crowds of b. pestis in the capillaries and veins. In the lungs there occur lobular patches of consolidation due fibrinous exudation into the alveoli and infundibula, the capillaries being distended with blood; hemorrhages occur in the peribronchial tissue with numerous b. pestis. In the kidney the capillaries of the glomeruli are distended by, and filled with, blood and b. pestis; the blood vessels in the cortex next the boundary layer are in many places surrounded by extravasated blood with numerous b. pestis. The vessels of the Malpighian pyramids are distended with blood, and some contain b. pestis. It is obvious that the blood of the general circulation readily yields b. pestis on microscopical examination and in culture.

The intestine shows, both in its small and large division, occasionally numerous punctiform hemorrhages the contents being bloody mucus; such mucus, even on microscopic examination and better, on culture and experiment on animals, reveals the presence of b. pestis in it. The spleen is literally packed with b. pestis; it is enlarged, and on section shows all parts of the pulp permeated by continuous masses of b. pestis. The number of b. pestis in the blood of the general circulation after death is, in some cases, so great that their number is not much inferior to that of the blood corpuscles.

In the liver many interlobular capillaries show masses of b. pestis; the liver cells around them in some places are full of fat globules, in other places they show coagulation necrosis. In the suprarenals the blood vessels are distended by blood; in some of these vessels are seen
continuous masses of b. pestis; particularly is this the case in the medullary part, in which extravasated blood is not uncommon."

PNEUMONIC PLAGUE.

The spleen and other organs show the b. pestis, but they are not anything like so numerous as in the lungs. The greater portion of the lung in these cases is in a state of red hepatization—deeply red, almost purple—and bits of it sink in water.

*Morphology.*—The plague bacillus is a non-motile rod, of a short oval to cylindrical shape, possessed of rounded ends, and measuring in dried or stained film specimens of the tissues on an average from 0.8" to 1.6" in length, and 0.4" to 0.8" in thickness.

The b. pestis stains readily with all the aniline dyes usually employed for staining bacteria; bacillus pestis shows the bipolar staining, both in dried film specimens of tissues as also of culture in a more conspicuous form and more constant than other bacteria. A further point to be mentioned in this connection is that b. pestis taken from the tissues—and this applies notably to b. pestis in the bubo—a fair number of individuals show an unstained vacuole either at one or both ends, whereas the rest contains the stained chromatic substance.

The bipolar condition is always marked and easily demonstrated both in b. pestis of the tissues as also of recent culture provided the film specimens are well stained and then well washed: if the specimen is over stained and insufficiently washed, the whole bacillus appears either uniformly stained, or it shows in places slight differences in depth of color.

The best methods of staining to show the bipolar character are these:

*(a) Methylene blue and eosin.*

Formula,—Concentrated aq. sol. of Methylene blue, Grubler ... 50 cc.
Eosin (solubie in alcohol) ... ... ... ... ... ... 0.5 gram.
Absolute alcohol ... ... ... ... ... ... 70 cc.
Distilled water ... ... ... ... ... ... 130 cc.

Film specimens are fixed, as usual, in the flame, then placed in absolute alcohol for about half a minute, dried, and placed film downwards over the stain contained in a watch-glass, here they are heated, the watch-glass being held by forceps high over a small flame till the dye shows distinct steaming. Wash well in tap water, then in distilled water, dry, mount in balsam. The plague bacilli appear deep blue (blue black) and distinct bipolarly stained; the red blood corpuscles are pink; the nuclei of leucocytes and other cells more or less deep blue.
Sections are placed first in absolute alcohol for several minutes, then kept in cold stain for several (six to twelve) hours, then washed well in water, and passed in the usual manner through absolute alcohol, xylol, and finally mounted in balsam. In these sections the contrast between blood corpuscles and connective tissues—pink,—bacteria and nuclei—blue,—is very striking.

(b) The ordinary Ziehl's carbol-fuchsin is used.—The film specimen is kept in absolute alcohol one-half minute and from one-half to one minute in the stain, washed, dried, and mounted in balsam. It is essential that the films after staining should be washed until no further discharge to the water of pink color is noticed.

B. pestis do not retain the stain after Gram solution, that is, they are Gram-negative, and share therefore this character with the microbes of the coli-typhoid and with those of the porteus group; it is important to remember this, because it is with just these two groups (b. coli, b. Gaertner, proteus) that error in diagnosis may be, and as a matter of fact has been, in some instances, committed.

When the film specimen is thin, well heated, and the preparation after staining well washed, no capsule can be observed on the plague bacilli.

Cultural Characters.—The plague bacillus grows well at 37 degrees C. It also grows well, but slower, below 37 C. down to 20 C. and less.

The best way to obtain rapid and reliable evidence of the growth of b. pestis is to plant the suspected material on the surface ordinary, i.e., faintly alkaline agar (beef broth, peptone, agar,) set in a plate dish and kept at 37 C. Next day the colonies are visible already to the unaided eye—better, of course, with a magnifying-glass—as small, rounded, gray, translucent, watery, slightly raised droplets. Examining these carefully with a magnifying glass, it is noticed that the edge of the colonies is not quite rounded, showing already now slight irregularities; these become more pronounced after a further 24 hours. At this time the colony is thinner at the margin than in the centre, is therefore slightly conicle; this also becomes more pronounced later. In transmitted light, and viewed under a glass, the substance of the colony—particularly in the central portion—is finely granular.

In stab culture of b. pestis, both in gelatine and in agar, the stab becomes marked as a series of opaque granules, and after some progress has been made each granule shows a filmy projection at one side or the other, at the same time the upper or free end of the stabbing is marked
A Study of Plague.

by a grayish-white film expansion of growth, which in cultures (agar) of some standing (two to three weeks) has the character of a rounded shield, showing distinct concentric and radial markings. This surface growth possesses the viscid nature of plague growth in a marked manner.

Streak cultures of b. pestis on agar show a filmy, grey, translucent growth which is of a characteristic viscid character. Streak cultures on serum and other agar compounds are of the same character. Later on the growth becomes thicker, less translucent, in reflected light of a slightly brownish tint, with numerous raised drop-like round thickenings.

On gelatine surface streak culture the streak becomes marked as an at first gray, then whitish, dry band, gradually thickening, and becoming more opaque and granular; the centre of the streak is thicker than the margin, which later is crenate, or, more correctly speaking, knobbed and with fine projections. The gelatine is not liquified at any time. A gelatine streak culture of b. pestis, as also a gelatine surface culture containing isolated colonies of b. pestis, is, after several weeks' incubation, extremely characteristic; whitish, dry, thick, granular, opaque, thicker in the centre than at margin; in streak, knobbed margin; in isolated colonies with filmy irregular margin and conically raised center.

In milk, b. pestis grows well at 20 to 37 C. without causing any change of the milk either in aspect or its fluid character. In litmus milk a slow and gradual change of the at first blue colour into less blue, then violet, and ultimately slight red colour takes place, thus showing that the b. pestis is a slow acid producer. This can be proved also in this way, that if of a culture of b. pestis in alkaline glucose broth, incubated at 37 C. for two or three days, a few drops be added to a few cc. of a watery solution of litmus, this at once turns distinctly red.

For the production in broth of greater amounts of bacillary masses, Haffkine hit upon the plan of covering the top of the broth with a layer of clarified butter or ghee. As mentioned above, when incubation takes place at a temperature at which the ghee remain solid—that is temperatures at or below 25 C.—its (the ghee's) under-surface becomes covered with masses of growth hanging down like shorter or longer whitish fringes (stalactites); these, on disturbing the fluid, e.g., by shaking, become detached and sink to the bottom of the fluid. On further incubation new stalactites are developed which in their turn, on shaking the culture, become detached, and fall to the bottom to increase the deposit. In this way—by rest and then shaking—
in the course of four to six weeks a continuous re-formation of bacillary masses (stalactites) can be insured, so that by this considerable amounts of bacillary sediment are obtained. This method is used in securing large quantities of the bacillus pestis to make the protective vaccine.

(To be continued.)

ETIOLOGY, SYMPTOMATOLOGY, DIAGNOSIS AND DIFFERENTIAL DIAGNOSIS OF DYSENTERY.

By T. S. L., University Medical School, Canton.

The term dysentery has its origin from the Greek, meaning 'difficult' and 'bowel.' It is usually applied to inflammation of the large bowel and to a less extent the small bowel. Hippocrates recognized two types of the disease:—one, in which the cardinal symptom was frequent liquid motion; the characteristic symptom of the second type was the presence of blood and mucus in the motion. Some ancient writers used the term dysentery to denote any disease in which there was a discharge of blood per anum. Such writers as Aretæus and Galen emphasized the fact that true dysentery must present the following symptoms:—there must be present, frequent motion of blood and mucus; there must be teres and tenesmus. They further said the condition was due to an ulcerated condition of the bowel. Recent investigators revealed the fact that true dysentery is an infectious disease due to the invasion of certain living organisms in the large bowel and to some extent in the small bowel. Certain cases of diarrhoea are true dysentery under a somewhat different clinical aspect; on the other hand there are cases of pseudo-dysentery which are not due at all to those living organisms which produce the true dysentery.

To classify dysenteries then, one should not go by the clinical symptoms or by the post-mortem appearances, but upon the etiological factors of the disease.

First.—Dysentery due to animal parasites.
Secondly.—Dysentery due to bacteria.
Thirdly.—Dysentery called pseudo-dysentery.

I. Dysentery due to animal parasites.—Under this heading there are several parasites which can produce the typical symptoms of the disease. They are:—the Entamoeba Histolytica of Schaudinn, Laverania Malariae, Leishmania Donovanii, Balantidium Coli, Lamblia Intestinalis, etc. Among these parasites the most important and common
one is the entamoeba histolytica of Schaudinn. The principal route by which the entamoeba gains access into the system is by contaminated food and water. When once in the system in sufficient number and when the resistance of the patient is low, they multiply and produce inflammation in the colon, rectum, or small intestine. They are not only found in the mucosa but are also found in submucosa, radicals of the portal veins, and at times in the mesenteric arteries in which they produce thrombosis. They live and feed upon the tissue cells, red cells and perhaps the leucocytes. In the mucosa they produce cellular and edematous infiltration which causes the mucosa to project in form of small elevations recognized as minute blackish points or sloughs at the summit. The sloughs are soon cast off and ulcerations follow which rapidly deepen; mixed infection soon follows and the joint action of the entamebæ and the bacteria forms roundish or oval undermined ulcers. The long axis of these ulcers is usually tranverse to the long axis of the bowel. The ulcers may deepen and eventually perforate through the peritoneum leading to peritonitis or abscess formation. In favorable cases the ulcers heal. Cicatrization follows which may constrict the lumen of the bowel producing stenosis. Adhesions between the bowel and the other abdominal viscera are common. The entamoeba may be carried to the liver or other parts of the body and form abscesses.

The symptomatology of the disease varies. It may be divided into the acute, chronic, latent, and mixed types.

In the acute form the onset is usually abrupt or it may be preceded for a few days by alternating diarrhœa and constipation. Pain in the lower abdomen may be very severe. Defecation is usually attended by griping and straining. The number of stools per day rarely exceeds thirty which contain blood and mucus. Microscopic examination of the stool reveals the presence of entamebæ, bacteria, leucocytes, mucus, shreds of tissues, etc. There may or may not be fever, the tongue is moist, slightly furred, and there may be nausea and vomiting. The abdomen is sunken and there is tenderness along the whole or a part of the course of the large bowel. The heart, lungs, spleen, and liver are normal. The output of urine is also diminished. A fall of temperature to normal is not infrequently accompanied by an abatement of pain or it may be a precursor of gangrene or hæmorrhage.

Death usually comes on at the end of the first week or ten days from exhaustion. In favorable cases the stools gradually become less frequent with less blood and mucus until finally they resume a normal state.
The chronic type. This frequently follows an acute attack or it may develop insidiously. It is characterized by alternate exacerbations of the acute attack and constipation. During the exacerbation the symptoms correspond more or less to those of the acute attack. The number of stools varies between twelve to fourteen a day. They contain the entamebæ, some greenish masses, blood, mucus, and large sloughs which are very offensive. The condition may persist for years and finally kills by exhaustion.

The latent type. The patient appears apparently well while entamebæ are present in the stool. Frequently ulcers are discovered accidently in post-mortem. This type of the disease is important because it may lead to an acute attack of liver abscess. Patients suffering from it are frequently "dysentery-carriers."

The mixed type. This is due to infection by both entamebæ histolytica and the Shiga-Kruse bacillus. From the onset the motions are very numerous. There is high fever, nausea, vomiting and profound constitutional disturbances. The motion is very offensive and contains great sloughs due to gangrene of the bowel. The prognosis is very unfavorable because exhaustion sets in early and the patient usually dies delirious or comatose. Death is rarely due to peritonitis.

II. Dysentery due to bacteria.—Bacillary dysenteries are caused by two main types of bacilli, namely, the bacillus dysenteriæ of Shiga-Kruse and the Flexner-Manila bacillus dysenteriæ. Besides these two, there are several other forms which, however, are not so important and are less widely distributed.

The mode of entrance into the body is practically the same as that of the enamœba. They are distributed chiefly by the faeces from a person suffering from the disease or by the so-called "dysentery-carriers." They are introduced into the alimentary canal by contaminated food, drink, or utensils used for preparing or serving the same. Dust and flies are also important factors in disseminating the disease. When once introduced into the system they begin to multiply in immense numbers. They are able to live in the alimentary canal without causing any symptoms of the disease until the resistance of the patient is lowered in some way or other. They give out two known toxins, one acts upon the lower bowel producing the typical lesion of the disease and the other acts upon the nervous system producing peripheral neuritis.

Symptoms. For three or four days preceding the onset of the disease the person suffering from it may complain of anorexia, general
malaise, with slight diarrhoea or constipation. It then begins with an attack of pain in the lower abdomen with an urgent desire to defecate. The stool may be perfectly normal, the evacuation of which may temporarily relieve the pain. Soon follows another attack of pain which may be localized around the umbilicus or diffused throughout the abdomen. Following this pain there is again an urgent desire to defecate. The stool now becomes softer. The pain now increases and the desire to defecate becomes more and more frequent until after a while the patient sits down almost continuously on the commode, straining violently. At the beginning the stool is faecal mixed with blood and mucus, later it ceases to become faecal but consists merely of blood and mucus. Before long the anus becomes red and inflamed and is very painful. Prolapse of the rectum is not infrequent and of course aggravates the suffering of the patient very considerably. Nausea and vomiting are not unusual. There is fever; the pulse is quickened. The tongue moist, but coated with white fur. Appetite is lost. There is also diminution of urine, and pain over the region of the bladder on straining. The abdomen is sunken and there is great tenderness over the whole course of the large bowel. The prognosis is very guarded. At times bacillary dysentery may develop insidiously with slight faecal diarrhoea. The patient may suddenly die of collapse due to gangrene of the bowel. Death is usually a result from exhaustion and toxæmia.

III. Pseudo-dysentery.—Any disease, other than those described above, which produces diarrhoea with the passage of blood and mucus with or without termina and tenesmus may be classified under this heading. It can easily be mistaken for true dysentery if one is not careful and thorough in one's examination. The causes of pseudo-dysentery are cancer in the intestine, hæmorrhoids, gumma, intussusception and certain poisons.

Diagnosis and differential diagnosis. To diagnose entamoebic dysentery from dysentery due to Shiga-Kruse bacillus is oftentimes impossible without the aid of the microscope. However, entamoebic dysentery runs a more chronic course than the bacterial form, fever is rare, and there is absence of toxic symptoms. Entamoebic dysentery is often followed by abscess in the liver. This is important to remember because not infrequently entamoebic dysentery also shows signs of fever and toxæmia.

Bacillary dysentery is a more acute disease, the symptoms are more severe, there is fever, symptoms of toxæmia, greater pain and
straining and early exhaustion. Abscess in the liver is not a common sequel. Culture may be made from the faeces and a correct diagnosis made.

Pseudo-dysentery. Careful examination of the patient and a good history of the case will help materially in diagnosing pseudo-dysentery. The absence of entamoebæ in the stool, the absence of toxic symptoms, high fever, etc., will generally exclude true dysentery.

Laveranic dysentery. The absence of entamoebæ in the stool, the milder dysenteric symptoms, and the discovery of the plasmodium from the blood of the patient will usually suffice in making a correct diagnosis.

Leishmanic dysentery. The absence of entamoebæ and the Shiga-Kruse bacillus dysenteriae, the presence of the other symptoms of Kala-Azar and the finding of the Leishmania donovanni will give you a correct diagnosis.

The differential diagnosis between entamoeba histolytica and the usual amoeba coli is as follows:—The entamoeba is larger in size; it possesses an ectoplasm; its motility is greater; it contains erythrocytes and bacteria. The nucleus is eccentrically placed, small, indistinct and contains little chromatin.

N.B.—Most of the references are taken from Castellani and Chalmers' Manual of Tropical Medicine. Manson's Tropical Diseases and Tyson's Practice of Medicine have also been used.

SODIUM SALICYLATE IN THE TREATMENT OF INFECTIONS OF THE CILIARY BODY.

By J. E. Gossart, M.D., Kuliang.

In 1899 Gifford recommended (in certain intra-ocular diseases) large doses of salicylates, i.e., 1.00 salicylate of sodium for each 6.5 kilograms of body weight. The average dosage is, accordingly, from 10 to 13 grams. Even in idiosyncrasies these doses can be given for from 3 to 6 days, provided that the patient stays in bed. According to the severity of the case the remedy is left off every 6th or 7th day. Two grams are given 5 times a day in half a glass of water and two teaspoonfuls of brandy. If the stomach does not tolerate this dose it may be given by rectum, 4.00 grams in a glass of warm water 2 or 3 times daily. After all inflammatory symptoms have subsided, it is left off every 3rd day, for from 2 to 4 days. More as a change for the patient the salicylate of sodium may be substituted by another salicylate or aspirin.
Sodium Salicylate Treatment.

Etiology.—The disease is secondary to iritis or choroiditis; or it may be the direct result of a wound or foreign body in the ciliary region; or it may occur as a sympathetic ophthalmitis. According to Sir Frederick Treves: “Penetrating wounds of the cornea alone, or of the sclerotic alone, behind the ciliary region, are by no means serious; but wounds involving the ciliary body, or its immediate vicinity, are apt to assume the gravest characters. Inflammation in the ciliary region is peculiarly obnoxious, on account of the important vascular and nerve anastomoses that take place in the part. Indeed, as regards blood and nerve supply, there is no more important district in the eye-ball. From the ciliary body also inflammations can spread, more or less directly, to the cornea, iris, choroid, vitreous, and retina. Plastic, or purulent inflammation of the ciliary body, after injury, is the usual starting point of the sympathetic ophthalmia. The subarachnoid spaces which surround the optic nerves are in continuity at the chiasma, and offer a path whereby infection may spread from one eye to the other.”

Pathology.—Small-cell infiltration of the ciliary body is present and this condition is especially marked in the purulent variety of cyclitis. Hemorrhages are frequent in all forms of cyclitis. Both the circular and radiating fibers of the ciliary muscle contain exudate and this exudate (fibrin) is considerable enough at times to push aside the individual fibers. The neighborhood of Schlemm’s canal is always densely infiltrated, and no doubt the inflammatory products in this locality—by blocking up the entrance into the canal—have not a little to do with the development of glaucomatous tension. The formation of membranes is usually seen. The cyclitic membranes may cover the entire posterior and anterior surface of the iris, and also the ciliary body, and even extend into the vitreous body. This membrane not infrequently envelops the lens and, contracting about it, cuts it off from its sources of nutrition. As a result of this the lens is often found as a small calcareous mass entangled in the meshes of the membrane and bearing no resemblance to its former shape. In the contraction which the cyclitic membrane undergoes, the ciliary body is drawn away from its normal shape. This cyclitic membrane is composed of connective tissue with interlacing bands. All shapes of cells will be found present. In very light cases this membrane may disappear by resorption. Masses of black pigment are to be seen here and there throughout the diseased parts. In the early stage the ciliary processes are thickened; finally, however, they undergo atrophy and become very much thinned. When the process has reached this stage, atrophy of the eye-ball is usually only a question of time.
Diagnosis.—This is made, according to Fuchs, as follows:—"Inflammatory symptoms of considerable degree, especially if edema of the upper lid is present (this edema does not occur in pure iritis); sensitivity to touch in the ciliary region; retraction of the periphery of the iris, indicating total posterior synechiae; disturbance in vision more considerable than would be expected from the opacities within the confines of the anterior chamber; and, finally, tension either elevated or lowered."

Case 1. Mr. Ling, aged 32, secretary to new official, entered the Yenping Hospital, March, 1912, complaining of blindness, photophobia and pain in the left eye. Patient reported that his trouble was of five days' standing and that at no previous time had he had any similar trouble. At time of onset he had become drunk following a feast.

Examination.—On entering, he presented a small corneal ulcer on the left eye; pus in the anterior chamber, swollen lids, conjunctivitis, corneal margin much inflamed. On the fourth day the pain had increased markedly and spread to the area supplied by the supra-orbital branch of the fifth nerve. Edema of the upper lid developed; intra-ocular tension was increased, anterior chamber deepened, tenderness became marked over the ciliary region. Photophobia and all signs became worse except the quantity of pus in the anterior chamber which diminished. He complained of pain in the right eye, but there was no other evidence of disease. It was impossible for him to get rest night or day till our treatment of sodium salicylate was instituted.

Treatment.—From the time he entered the hospital until the end of the fourth day, he had hot moist applications every hour during the day and occasionally during the night. The conjunctival sac was irrigated with boric solution followed with drops of 1% zinc sulphate daily. Yellow oxide ointment was also applied. On the fifth day 160 grains of sodium salicylate was administered in four ounces of water. On the sixth day, sixty grains morning and evening; eighth day, sixty grains; ninth, forty grains. No further treatment except the boric irrigation and occasional drops of zinc sulphate and application of ointment. During the course of sodium salicylate, the patient slept well and complained of nothing except weakness. On the seventh day, the urine became less in quantity than normal, and on examination was found to contain evidences of kidney irritation. A well marked ring of albumen, several small and large hyalin casts. Two days later, some granular casts were found, but with the withdrawal of the salicylates, the quantity of the specimen increased to almost normal. The patient
then suffered with pain in the lumbar region that involved the muscles of the thigh in a spasm that tended to be relieved on flexion. We required him to stay in bed and the nephritis improved to the sixteenth day, to the extent that the urinary signs were most gone and the lumbar pains diminished. Pot. acetate in doses of 15 gr. four times daily for two days was administered. The patient, then, contrary to our advice, left the hospital with the diseased eye normal in tension and less marked fear of light, no tenderness over the ciliary area; a diminishing iritis; the ulcer perfectly healed; a posterior synchiae; able to see light. Three days later he returned, after having resorted to his wine, and we found it necessary for some time to treat his kidney condition. We used pure atropinsulphate to assist in breaking up the adhesions of the iris which was only partially successful. However, the inflammation entirely subsided and the patient is well able to distinguish light.

Case 2.—A laborer, aged 28, came into the hospital at the same time No. 1 was being treated. He presented a wound in the cornea of the right eye, caused by a sharp piece of bamboo; it had penetrated the iris at the corneal margin.

There was some opacity of the lens. The lids were swollen, the ciliary area tender on pressure. Intra-ocular tension increased, intense pain in the temporal region on both sides. Loss of vision and photophobia were prominent symptoms. Treatment was the same as No. 1 except 60 grains of sod. salicylate were given twice daily for two days with no change or a very slight improvement in the photophobia and pain. He refused to keep his bed and we did not deem it wise on that account to increase the dose of salicylates. The patient returned home and no further information was secured.

These cases do not allow us to draw any definite conclusions, but are probably worth mentioning as an advance in the treatment of opthalmitis and injuries to the ciliary body. Local treatment is certainly of no avail in the larger percentage of these cases. We hope that others will have opportunity to try the use of sodium salicylate that our knowledge of its value may be increased.
APPENDICITIS, PERITONITIS, CHOLECYSTITIS, AND SUBPHRENIC ABSCESS IN ONE PATIENT.

ALLEN C. HUTCHISON, M.D., Kashing.

The case described below has been one of the most interesting cases the writer has ever come in contact with, and he hopes it may prove interesting to others as well as stimulate to more careful diagnosis in complicated cases, the tendency being for the surgeon or physician in the presence of already discovered lesions of great severity to overlook other conditions in the patient often of equal moment.

Patient, Sen, male, age 31, admitted to Kashing Hospital October 27th, complaining of agonizing pain from abdominal distention and retention of urine.

History.—Trouble began with fever six or seven days before admission, followed in two days with pain in abdomen which soon became localized over right iliac fossa. Came to Kashing dispensary two days ago for abdominal pain; seen by a student who asked him for specimen of feces; being unable to get specimen student gave him santonin and calomel followed by epsom salt after which patient passed several round worms. For past forty hours patient unable to pass feces or gas and no urine for twenty-four hours past.

Examination.—Patient on back; knees flexed on abdomen; expression of anxiety and pain, mouth dry, parched. Abdomen, marked distention with board-like rigidity over all, with tenderness, though latter decidedly more marked over area of appendix. Whole picture one of general peritonitis with paretic intestinal obstruction. Enema given before operation returned clear; no gas passed.

Operation.—On strength of his clear history and the marked tenderness over McBurney's point, incision was made over this point rather than in middle line. Abdominal wall edematous, thickened. On opening peritoneum a gush of foul pus into wound. An eroded and gangrenous piece of great omentum as thick as little finger was found covering front and base of caecum. This was ligated, removed, and search made for appendix. Distention so great that examination of region almost impossible. Unable to drag adherent caecum into wound, but hooking finger under the adherent base could feel nothing like the appendix though could see from the condition of point where appendix should have been and from which I had removed gangrenous omentum that in that area had taken place a most virulent infectious
process. There was no localization of pus, but a general peritonitis was present. Thinking appendix had probably sloughed off and deeming further manipulation unwise, I put in tube down to base of cæcum and closed upper angle of wound.

For next twenty-four hours patient almost pulseless, skin cold and clammy. Enemas alternating with saline every four hours given for forty-eight hours with no return of feces or gas, I was debating opening him in middle line and looking for a real organic intestinal obstruction when at the end of this time he passed gas and feces. At the end of fourth day distention had decreased considerably, patient passing feces with each enema, and taking some nourishment. An active cathartic now administered, spontaneous passages were started. Patient felt decidedly better and hopeful. Appendical wound discharged freely for days and began to clear up nicely. Patient said pain had completely disappeared. Temperature ranged between 99 and 101. On eleventh day complained of great pain in epigastrium which area seemed quite distended; finally, immediately after an enema, pain disappeared. Twelfth day complained of some pain under right subcostal arch in region of gall bladder. Pain and tenderness better on following day, but still some soreness. Fourteenth day tenderness acute, but very localized, exactly in gall bladder region. Marked rigidity over upper right rectus muscle.

Operation under chloroform.—Incision just under ribs through outer edge right rectus which showed infiltration and edema. Just under peritoneum found a small walled-off cavity containing 2 to 3 drachms greenish fluid like bile. Posterior and upper wall of cavity formed by an adherent gall bladder from which I concluded that I had gotten into a small cavity surrounding a minute perforation of gall bladder. Gall bladder opened found much distended with six to eight ounces thick material also about a hundred small black stones; the latter I judged to be the result of the cholecystitis rather than primary factors in cause of pain and tenderness. Gall bladder was drained with rubber tube. Patient reacted well.

Temperature which had been 102 just before operation did not again go up to 101. Meanwhile, appendix wound practically healed; bowels moving daily, he was taking nourishment, and gall bladder draining freely so that in spite of the very apparent weakness of patient I was beginning to think he might live through it when suddenly on morning of 21st day he coughed slightly, his throat became filled with fluid and he looked like a man in the last stages of edema of the lungs. Voice almost lost and he was very cyanotic, pulse almost
imperceptible and I expected death at any moment. A rupture of some abscess into the lung was suspected, but though he expectorated more or less fluid all day nothing like pus was seen by me. By evening, strange to say, he had rallied somewhat, so an examination was made. Knowing his abdominal history I naturally suspected subphrenic abscess with perforation, but I found flatness as high as the second rib and failed to find the tympanitic note over fifth to eighth ribs as you are said to get in a subphrenic abscess, containing as they usually do air. Neither was there any tinkling sound nor was there the usual lung resonance above the area of what should be a subphrenic abscess. The fact that he had had previously absolutely no cough, and no pain referred to his chest, seemed, however, to militate against an empyema. I felt certain of two things, however; that some pus cavity had ruptured into his bronchi and that he had pus between his second and sixth ribs where was the region of maximum flatness. Where to put in the needle, however, was a question. Realizing the advantage of low drainage yet finding area of greatest flatness not over the lower ribs, where even the liver itself will give a certain amount of dulness, I decided to aspirate where dulness could only be explained by fluid over a collapsed lung and not where it might be due to liver dulness. I put needle into fifth space fortunately pushing downward rather than horizontally and drew out a barrel of fluid, foul-smelling pus. The man was almost in extremis, could neither be moved nor be given an anaesthetic, therefore without further needle puncture I decided to operate quickly in the spot where I knew pus to be. An incision made in fifth space anterior axillary line right side was followed by a gush of large quantity of fluid, but to our surprise it was not at all of the nature of the pus just aspirated. The diaphragm could be seen just below upper border of sixth rib, a needle was thrust into this and again we obtained the foul pus of a subphrenic abscess. Incision enlarged; pus evacuated; two large tubes put in omitting the step of closing off pleural cavity which in this case was certainly not feasible. His cough immediately ceased. Temperature, which had dropped down to 99.4 in morning, never rose again above that point. Pulse was thready, rate 140 and man's condition was most critical. Thirty-six hours after this last operation his friends took him home where he died two days later. He would in all probability have died in the hospital, but it was discouraging to feel that I could neither see him to the end nor get an autopsy on a case that had so engrossed me for three weeks.

One of the most remarkable things about it is how his heart stood the strain for 25 days. A revelation in vitality. Further, it showed that
the absolute paresis and distention of general peritonitis need never be despaired of. Again, while I am perfectly satisfied that he had a cholecystitis and that operation was justified, yet I am free to confess that in a certain way it did him harm as I was so satisfied that I had gotten to the bottom of his trouble that I ignored his pain which continued in that region, attributing it to the pain of the wound in gall bladder rather than to the subphrenic abscess to which I am now inclined to give most credit for his suffering. Without the gall bladder mask I believe I should have discovered his condition earlier. Further, why were the physical signs of this subphrenic abscess different from what you usually find in such a condition? In the first place, I think the cause was different from that in the ordinary cases which are due most often to perforation of a gastric ulcer and in consequence contain air, while this case was due I think to pus from the general peritoneal cavity finding its way into the lesser sac and there becoming shut off and growing in a more favorable situation. It therefore had no air and gave no tympanitic note. In the second place, the pleuritic effusion above the abscess obscured any lung resonance and gave the signs of a high empyema instead. Had I not fortunately pushed the needle in quite a downward direction I should have remained ignorant of the subphrenic condition and been content with letting out a large serous effusion in the pleura. It is well, therefore, to keep in mind this possibility of a complicating serous effusion and put in the needle lower than I did. The cholecystitis was probably due to infection during the damming back which occurred while he was suffering from a paretic block of his intestines.

Capsicum.

By Newton H. Bowman, M.D., Choon Chun, Korea.

If I were called upon to suggest an agent to encourage amongst the medical profession and the laity alike I would choose for my subject Capsicum Fastigiatum because it is a "pure, energetic, permanent stimulant" with a wide range of usefulness and, too, because it is the most logical substitute for the indiscriminate use of whisky and brandy in times of emergency and further because it would eliminate the dangers of creating the drink habit, and block the road to a drunkard's career in many a case. It is a friend indeed in the time of need and relieves the insatiable desire for drink of the alcohol habitués and
dispels the terrors of delirium tremens into a restful sleep by sustaining the nervous system.

A teaspoonful of tinct. capsicum in a teacup of hot water makes a good pepper tea. As a "cold" remedy it has no equal and "warms up" a chill like magic and relieves colic in the stomach and cramps in the bowels.

It is the counter part of the family pepper sauce gargle which acted like magic in the case of "quinsy sore throat" and to this day there is no gargle more efficient in aborting the inflammation of an acute catarrhal pharyngitis and relieving the hoarseness.

A little tinct. capsicum and lobelia in a cup of hot water combined with a little paregoric makes an ideal sudorific for the speedy relief of acute congestions and inflammations anywhere in the body, and represents in a modified form the "stimulating tea" of the Thomsonian era in America which served a good purpose in the relief of disease.

As a rubefacient it is very useful and has the property of not producing vesication. In the form of a liniment it has long been used advantageously for the relief of pain. The following formula is a very efficient application in rheumatic, pleuritic, neuralgic, and other pains:

"Tinct. capsicum two fluid ounces; tinct. opium and aqua ammonia, each three fluid drachms; oil of origanum, two fluid drachms; oil of cinnamon and tinct. of camphor, each one fluid drachm. Mix."

A piece of adhesive plaster, such as is in common use, spread with a little oleoresin capsicum constitutes a very desirable pain plaster; while it may cause considerable "burning" it will not blister and can be worn for three or four days with advantage. Another method is to wet a cloth with alcohol and sprinkle powdered capsicum on it, which has many advantages over the mustard plaster. "Anti-emetic drops" much used in domestic practice are composed of powdered capsicum one-half ounce and two drachms of salt to one-half pint each of vinegar and water. This has long been used as a remedy for vomiting and nausea; to be given in tablespoonful doses as often as required. The use of red pepper, salt, vinegar, and water in combination is used a great deal by the Koreans in this section for sick stomach. However, my experience with this combination has been limited and I cannot speak from experience as to its efficiency, but think it worthy of a trial in the absence of something better. A piece of flannel saturated with concentrated tincture of capsicum is very efficient for chilblain, if rubbed over the surface until a tingling sensation is experienced, repeat at intervals until cured.
A piece of cotton saturated with the tincture placed in the cavity of an aching tooth is equal to any agent I have ever used for the relief of toothache. If there is no cavity in the tooth apply a small capsicum plaster over the gum and note the result.

In atonic conditions of the lower bowels accompanied by constipation, I have frequently used powd. capsicum, gr. ii; aloes gr. ¼. Pill one, with good results.

In old people who are poorly nourished and the body-heat is low and reaction sluggish, capsicum given internally rectifies the condition to a remarkable degree. In the treatment of malaria I can verify the statement that less quinine is required when combined with capsicum; especially is this true of the intermittent types.

Further repetitions of the uses of capsicum could be made, but I believe this rehearsal of its virtues is sufficient to remind us of its almost forgotten worth.

VISIT TO MAYO CLINIC, ROCHESTER.

W. B. RUSSELL, B. S., M. D.

Although reports of visits to the Mayo Clinic, Rochester, Minn., have appeared in the Journal from time to time, yet, perhaps, it would not be amiss to again call the attention of our friends in China to some impressions that remain from our second visit to that unique clinic where I took my wife for operation, having been forced to discontinue our work in Central China.

Rochester is a quiet little city of about 8,000 inhabitants, nestled in a small valley engirdled by beautiful hills. The little city has electric light, gas, and a splendid artesian water supply, but it seems the qualities innate in and acquired by Drs. Mayo and the leading members of their staff—of now about forty physicians, besides about sixty office and laboratory employees—that have made this clinic of world interest to laity and the profession alike.

We were first impressed with the hearty welcome received at the Surgeons' Club, that meets for special lectures and regularly every afternoon to discuss the clinic of the morning, and also with the constant, frank and unassuming manner of the whole Mayo staff. We were surprised at the great development in laboratory and other facilities for physical examination and research work, since our last visit, and greatly pleased to see their new five story office building going up, where they plan to install every possible modern con-
venience both for their ever growing work and to be able to invite visiting physicians to take more part in their work and make their visit more practical and beneficial. And yet with all these facilities the Drs. Mayo have called to their assistance, Dr. Wm. J. Mayo says: "If we can't make a diagnosis on about three things, and the most important of these the clinical history, we cannot make it at all." Nothing impresses one more than the thorough routine examination of every patient and how simple and yet complete can be made the records by the numbered envelope method they use. One finds on their staff the best specialists in stomach, genito-urinary, oesophageal, eye, ear, nose, X-ray, research work and all the rest that can be had. The weekly meeting of the staff is most interesting for its free discussions.

As one witnesses the skill with which Dr. Wm. J. Mayo operates on all conditions in the abdomen and pelvis and especially watches his results after his great resections of all parts of the alimentary canal for malignant disease, one can but feel that he is a master. And yet when one looks over the list of operations for his, as well as the other three rooms in which Drs. Chas. H. Mayo, Judd, and Beckman operate, we can but be surprised at the large number of exploratory operations, every abdominal operation is in some sense exploratory; so they usually use high or low incisions making them large enough to make thorough examinations of every organ in abdomen and pelvis, the nurse making careful record at once of all findings and having any doubtful tissue examined at once under stained frozen section by a competent pathologist who is always waiting in the laboratory adjoining the operating rooms.

One is impressed with the accuracy of their kidney diagnosis and the ease of the direct cystoscope, which catheterizations, collargol injections and X-ray plates; also with the ease and thoroughness with which Dr. Wm. J. Mayo operates on all kidneys through his new incision, which he begins near the vertebral spine of the eleventh rib passing almost vertically down half way to crest of ilium then passing anteriorly to above anterior superior spine of same, cutting the twelfth rib when necessary to more completely mobilize the chest wall. This incision makes delivery of the kidney easy and lessens the danger of entering the peritoneal and pleural cavities as they are directly under the eye of the operator and if opened can usually be closed without endangering the patient.

He is removing enlarged spleens for splenic anemia, malignancy and splenomegaly from whatever cause, with encouraging and sometimes almost marvelous results. He says: "The enlarged spleens we
find in China should be removed." In these cases he usually employs the right rectus incision, which he often extends around up to the ensiform cartilage and downward and outward above ilium, thus nearly always making it possible to deliver those often very large, friable spleens "turtle fashion" and catch the pedicle in a large curved rubber covered forceps, when the vessels are tied separately with large catgut and the organ removed. His operative mortality is low in this class of cases, as it is in all his work.

In his gall bladder work he advocates early operation with drainage and careful removal of stones (quotes three returns of stones in 5,000 cases) and never removes gall bladder unless indications are clear as impacted cystic duct stone, the strawberry inflammatory type, or malignancy. In common duct obstruction he is careful to drain the hepatic ducts by an ordinary catheter introduced through the common into one of the hepatic ducts, having a hole opposite the other, as practised by W. E. B. Davis of Birmingham; this is left in for a week or ten days.

In his stomach work, Dr. Mayo never does a gastroenterostomy for symptoms but must find an ulcer, or pathological obstruction of the pylorus, always doing the posterior short jejunal loop operation when possible, and whenever he is forced to do the anterior long loop operation he places an extra stitch in the jejunum, on either side of the stomach opening, to prevent kink causing the vicious cycle. In carcinoma near pylorus he resects the stomach as far as a vertical line with the cardiac opening, removing all glands after first tying all the main vessels with catgut ligature, cutting them between ligatures; doing in this way an almost bloodless operation.

Their method of preparation of patients for operation is very simple, 5⅔ of castor oil is given at 5 p.m. on day before operation, patient has a general bath, and the field of operation is shaved without soap before patient comes to operating room.

On arrival at operating room, taking his position on the table the field of operation is scrubbed with gauze and 1 to 1000 iodine in benzine and then 3½% tinct. of iodine is painted on skin as soon as the benzine has dried and the field is now ready for operation.

Drs. C. H. Mayo, Judd, and Beckman are doing more goiter work with better results than ever, but have little that is new in that line. They are doing a great many prostate enucleations now, but are using entirely the suprapubic route, after careful preparation of patient for operation, and following operation with continuous bladder irrigations of first alum sol. and then boric acid, with excellent functional
results and very low operative mortality. They are doing their usual amount of hernia, breast amputations, and all other forms of cancer, but save developments in gland work have few new developments.

However, I saw Dr. Beckman doing a simple operation for old fistula in ano that I should like to recommend to every one in that line of work in China. Take a case I saw him do, the fistula, a large one of three years' standing, in a woman, seemed to start from the Bartholiu's gland where the external opening could be seen with faeces coming from it, the internal opening just inside the external sphincter ano. The mucous membrane of the rectum was dissected free, about as in the old Whitehead operation for hemorrhoids, and then drawn down until the fistula opening could be drawn down past the skin, where it was cut off and the sound mucous membrane and skin was united with running chromic catgut suture and the external opening of the fistula was opened, freely cleaned out, and packed with iodiform gauze, the sphincters not being disturbed. He says these cases heal rapidly and the cure is permanent and sphincteric function undisturbed.
The China Medical Journal.


The yearly subscription to the China Medical Missionary Association is $4 Mex., payable in January of each year. This includes the JOURNAL and postage on the same, whether local or foreign.

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The Editors will be obliged if all those who are building hospitals will send copy of plans and detailed description (in duplicate if possible). These will be loaned, on application, to members who are proposing to build.

Editorial.

ARTERIOSCLEROSIS IN ANCIENT EGYPT.

The considerable amount of work that has recently been done on the mummies of ancient Egyptians has convinced us that mankind in this time suffered for the most part from the same diseases as at present. But it is with some element of surprise, in light of the current conceptions of its etiology, that one learns that early arteriosclerosis was apparently as common with them as with us. A recent article by Ruffer* includes the results obtained in the study of portions of arteries from twenty-four mummies, ranging in period from 1580 B.C. to 525 A.D., and in seventeen of these marked evidence of arterial disease was found. The problem was complicated by the fact that in the process of embalming, extensive destruction of the vascular system was caused, owing to the practice of removing the viscera, and even many of the muscles, and substituting for them a "filling" of foreign materials of various sorts. When, however, careless work was done,—for embalmers were no more infallible then than at present—portions of various arteries survived the process, and at least one artery, the posterior peroneal, was so situated as to escape frequently.

The sclerosis found in so many cases ranged in degree from a mere fibrous thickening demonstrable only to the naked eye and to the touch, to a degree of calcification as complete as anything

* Jour. Path. and Bacteriol., 1911, xv, 453.
of the sort found at the present day; and in no respect were the lesions dissimilar to those of the same degree occurring at present. In several cases calcification of the cartilages of the ribs convinced Ruffer that the process had taken place at no very advanced age.

If, then, the twenty-four cases examined are not utterly exceptional, we are forced to conclude that arteriosclerosis was quite as frequent in the dim past as at present; and the etiology of the disease, at best sufficiently obscure, becomes even more difficult of explanation. For, of the various factors invoked to account for the process, tobacco, of course, is out of the question; syphilis can be excluded almost with certainty, as no other evidence of this disease has been found in Egyptian remains. Alcohol, it is true, was indulged in, but there is little reason to consider the Egyptians of any class as habitually heavy drinkers. The "wear and tear of modern life" care scarcely have affected a people living at that remote time, under a tropical sun, with working hours which are known not to have been especially severe. As to diet, as with most tropical peoples, this was mainly vegetable in character; though, as Ruffer points out, his cases may be exceptional in this regard, as they were for the most part of priestly caste, and hence possibly exempt from the usual dietary limitations. The only remaining factor, hard physical exertion, could scarcely apply to people of this class. And while, in the absence of any more evident causes, we shall probably continue to blame tobacco, and alcohol, and syphilis, and the strenuous life, for early arterial disease, it will be well for us to remember that it occurred in the apparent absence of these factors as far back as thirty-five hundred years ago.

H. E. E.

AN IMPORTANT CORRECTION.

I must apologize for a serious mistake in my paper in the November Journal. I had used a CO-haemoglobinometer by one of the best makers. These are supposed to be imperishable, and as the colour-index worked out at about 1 in nearly every case I had no reason to suspect it. But when, after long delays, two new ones arrived it was quite obvious that my old instrument was
reading very much too high. I sent a corrected version to the
JOURNAL at once, but too late for insertion.

The true facts about haemoglobin and colour-index here seem
to be these:—

Chinese coolie class.  Foreign and upper class Chinese.
Haemoglobin: about 100%.  about 115–125%.
Colour Index: about '85.  about '95-1.

These figures must be regarded as provisional only. The
number of foreigners and of entirely healthy coolie-class Chinese
examined is too small to reckon from; but I can state positively
that high red counts and high haemoglobin percentages have been
found in every foreigner or well-nourished Chinese student that I
have examined; and the coolie-class figures represent what I have
actually found in patients suffering from minor diseases or those
not usually supposed to affect the blood. Cases of typhoid and
other fevers have given counts correspondingly high as compared
with European figures for these diseases.

R. A. P. HILL.
A meeting of the Peking Branch of the China Medical Missionary Association was held on Thursday, October 24th, at 8 o'clock, at the Union Medical College.

Dr. Gray opened a debate on: "English versus Chinese as the best medium for teaching Medicine to the Chinese." The following are the points on which he laid emphasis:

1. Chinese opinion on the subject favors English. Perusal of the lexicon by Chinese only results in their emphasizing their objections. Lexicon already out of date, none of the new terms of the last nine years. Compare lexicon with Western official nomenclature of diseases, practically the same for all European nations. The Chinese trained student is quite outside of this except for a few instances of transliteration which are meaningless.

2. The Chinese trained student is without a medical library; the text books published by the C. M. M. A. are extremely limited. The medical missionary translator has no time to keep his translation up to date with the new editions of the original book at home.

3. The Chinese trained student is without medical journals; the one published in Canton can only be regarded as parochial in its influence.

4. Our students after five years are at once cut off from intercourse with men who understand the medical terms they have been taught. Even medical missionaries whom they assist are ignorant of the lexicon terms. They are cut off from consultation with foreign practitioners; they have no medium for medical discussion with returned Chinese students.

5. English has been chosen by the Chinese government as the official foreign language. All candidates for government employ must know at least one foreign language. The same standard should be set for Chinese medical practitioners.

6. Two medical schools in the Far East, Tokyo and Kobe, turn out students in no wise behind our European colleagues. In these institutions a sine qua non is a competent knowledge of German. In Indian universities the teaching medium is English; even hospital assistants in India keep up with medical journals.

7. The names of Kitasato, Shiga, Katsurada, and Hata are among the well known names in the world of science. They were all educated in German. They are now founding Medical Science in Japan. Our students must be able to cooperate with returned students in the founding of Medical Science in China.

8. Our teaching of English along with the general medical curriculum is quite inefficient. No student after five years with such teaching can be expected to read medical literature, or discuss medical subjects in English.

9. Our students are out of personal touch with teachers, mainly because conversation is not easy.

10. Foreign doctors who would gladly give us their help are debarred from doing so by language difficulties. A post graduate course could be started with the help of legation and legation guard doctors.
11. The teachers' knowledge of Chinese is compartmented. The Professor of Physiology, e.g., is very likely unable to follow the lectures of the Professor of Obstetrics, and so with all the professorships.

12. Of the seventeen medical schools existing and prospective, six teach in English, six in Mandarin, four in the vernacular, and one in German. It is thus seen there is no uniformity in Chinese medical education. The Chinese themselves have adopted English as the teaching medium in Engineering and Technical Colleges, e.g., the Tang Shan College of Engineering.

Dr. Stuckey then replied, the points of his paper being as follows:

1. It is not natural to teach in a foreign language. No self-respecting country will long admit that its language is inadequate for the expression of technical terms; much less China with its literary history. Though the present opinion of Chinese educators is in favor of teaching in a foreign language, the reason given is that "it cannot be taught in Chinese,"—both because of the terminology difficulty, and because there are not sufficient Chinese-speaking teachers to be obtained. If you press them with the question whether it will be necessary permanently to teach the technical subjects in a foreign language, they all say: "No, only for the present." If the educational authorities adopt a foreign language for the teaching of Medicine, it will almost certainly be German.

2. Even the best English speaking students, unless they have resided abroad, cannot follow a reasoned argument in English. They must have it all in books and notes. The Tientsin Anglo-Chinese College men are finding that in order to explain to their college students, they must learn Mandarin; even the southern students follow Mandarin better than English.

3. The great argument brought forward for teaching in English is that we shall secure more students of a better class. This I consider to be entirely unproven and very problematical. The students will require to have at least six years, not merely of English teaching, but of teaching with all the lessons in English. The Tientsin Anglo-Chinese College finds that its great difficulty is to get men to go from the preparatory grade into the college classes; only ten or twelve out of three hundred and fifty. The Peking University only has some seventy out of four hundred odd.

From government schools we can hope to get very few up to our entrance standard in Chemistry and Physics, (yet part of Dr. Wenham's scheme is to abolish our preparatory class). The best students who are well up in English, Chemistry, and Physics will certainly prefer to go to America to be trained. As regards students from Mission schools:

4. The change would cut out Mission students very largely. This is frankly admitted, as one expressed it: "I came to China as a missionary to medical students rather than to train medical mission students." The college was established as part of a scheme of missionary education. We have definite relations to Tungchow College, and they have recently rearranged their college curriculum giving elective courses designed to prepare students for entrance to the medical college.

5. The change would lighten the burden on the teachers, but throw it on the students. As one of them said to me: "We under-
stand more of even indifferent Chinese than we would of your good English."

6. It would remove the great incentive to acquire Chinese in the case of the newly arrived teachers. This is the experience of the Tientsin Anglo-Chinese College men. However good the intentions may be, if it is possible to begin the work in the college immediately after arrival, the new men will not have time for that wearisome drudgery that must needs be endured if a working knowledge of Chinese is to be obtained. Even for what they do learn, they will lack the constant practice in speaking which is necessary to retain any Chinese which has been learned. They will thus be crippled in their hospital work and largely debarred from preaching to students or hospital patients in their native tongue. Religion in a foreign tongue does not easily reach the heart.

7. It will be impossible to use any of our graduates as teachers in the college. Even those who can follow a lecture pretty well in English will find it practically impossible to lecture in English. We shall then be confined for teachers to foreigners or foreign-trained teachers.

8. A great point made against our teaching in Chinese is that the lexicon medical terms are a "foreign language" and can only be understood by those who have been trained to their use. The same is true of any set of technical terms; they are not current language, and can only be understood by those who have had the meaning explained to them. We all admit that the terminology needs revision and improvement, but that does not mean throwing it over.

9. The change would mean one change now and a change back again in ten years' time. The process of changing will occupy six years at least, and then it will be just about time to repeat the process back again. We are bound to enter a class in Chinese next year to keep faith with students in our preparatory class and others. I personally think we are bound to enter a class in Chinese the following year also, so as to keep faith with the students preparing in Tungchow. So, if we start in English next year, it means duplicating classes for two years throughout the five years' course. Even then it means that a student who has failed has to withdraw altogether, however far on in his course he may have advanced.

10. Abandoning the teaching in Chinese by our college means practically an admission that Medicine cannot be efficiently taught in Chinese. If we cannot, no other college in China can. It seems to me that we are giving in just when the battle is practically won. We have a staff trained in the medical terms, text-books are being continually issued, a medical paper has been started. We have graduated two classes of students who are doing good work, even if they are not yet up to home standards. Some of the junior classes in the college are of better quality than any who have yet graduated. To me the difficulties that face us are only a reason to press on in the present methods and make them more efficient.

11. The greatest argument in favor of teaching in English is that there is open to them the wealth of medical literature in English which for many years will not be available in their own language. I am perfectly agreed with this, but the desired end can be attained in other ways, far short of dropping Chinese as a medium of instruction. We should require a higher standard of English for
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entrance. English should be made a compulsory examination in each year. We should teach both sets of terms aiming at making students bilinguial as far as terminology is concerned. Perhaps post-graduate work might for the present be done in English.

Of the other speakers, Dr. Gloss, Mr. Gleysteen, and Dr. Read spoke shortly in favor of Chinese. Mr. Bevan, Dr. Wenham, Dr. Bolt, Dr. Dilley, and Dr. Stenhouse in favor of English.

The following points were brought out in the discussion:

1. That a sufficiency of students capable of studying Medicine in English can be obtained. (Bevan, Government University; Bolt, Ching Hwa College; J. B. Tayler, Tientsin.)

2. That the present lexicon terminology will not stand; that it needs complete revising. (Ingram, in conversation.)

3. That the present Chinese educational authorities are all in favor of teaching Science subjects in Western languages, and believe that is the only way. (Dr. Moses Chiu, Government University.)

4. That our work should be primarily that of a Mission to medical students, hence we want to get the best class of men and to give them the highest standard of training, thereby putting them in a position to work alongside of foreign-trained Chinese medicals, and to go ahead for post-graduate work. That we aim in this way to influence and Christianize the future medical profession of China and not merely to train men up to the standard of hospital assistants. (Hill, Stenhouse, Wenham, U. M. C.)

5. That as long as we teach in Chinese it will be impossible to obtain recognition from such a body as the General Medical Council in Great Britain and hence it is impossible for our men to go home to take post-graduate work or higher degrees without first going through a complete medical course there. If, on the other hand, we teach in English and reach a sufficiently high standard, this recognition might be obtained, just as in the case of Tokyo University.

6. That the attitude of the Chinese has changed very greatly during and since the revolution. We should go with them or even ahead and not lag behind. All higher government schools are adopting English, and the Mission schools in Chihli are bringing in a six years' course in English in their high and middle schools, preparatory to their college course.

7. That there is much probability that either a simplified form of character or a Romanized form will be adopted all over China; and that in the present uncertainty when the elementary scientific terms are still not fixed it is too early to try to fix a medical terminology and to translate books. That it will probably be at least another generation before Medicine can be satisfactorily taught in Chinese.

8. The present class of men is admittedly very inferior. The fifth year men are not worth teaching; the fourth and third and fair; the second very inferior, and the first probably also poor.

9. That the college would gain enormously in influence and prestige by the change to English and would obtain the higher class of students. (Backhouse.) This course would greatly facilitate future cooperation with the educational work of the Chinese themselves in the University and elsewhere. (Dr. M. Chiu.)

F. J. Hall, Secretary.
The Annual Meeting of the Korea Medical Missionary Association was held in Seoul, September 23rd-25th, 1912. Twenty members and fifteen visitors attended during the course of the sessions.

After the preliminary business was disposed of the new officers were elected as follows:—President, Dr. Van Buskirk, Kong Ju; Vice-President, Dr. Currell, Chiu Ju; Secretary and Treasurer, Dr. Weir, Chemulpo; Editor, Dr. Ludlow, Seoul. The following new members were also elected:—Dr. M. C. Harding, Mok Po; Dr. C. I. McLaren, Chiu Ju; Dr. A. I. Ludlow, Seoul.

Papers followed by discussions were read by the following:—

Dr. Reid, Unreduced dislocations.
Dr. VanBuskirk, Some possible causes of convulsions, epilepsy, and insanity among Koreans.
Dr. Avison, Cholera.
Dr. Patterson, Bacteriology of surgical work.

There was also a symposium on "The best thing I have learnt this year," and a discussion on the relation of body and spirit.

Committees were appointed for Education, to cooperate with the Severance Hospital Medical School, with a view to endorsing diplomas in the name of the association; Nursing Education, to examine nurses trained in Korea and secure a uniform standard; Tracts, to produce small pamphlets on medical and hygienic subjects suitable for the use of all missionaries in their classes; Medical Terms, to collect the terms used in Korea and find their approximate medical value; Research, to cooperate with the Commissioner of Research; Representative, to advise members and assist them when necessary; and a special Committee on Furloughs, to collect facts on which a reasoned opinion as to the best length of furlough can be based.

It is hoped that there will be a wide demand for the medical tracts which are being got out and which should be in the hands and in the mouths of every Christian teacher in Korea if the elevating work of Christianity is to have its full effect. The medical association may produce them, but their use must depend upon the bulk of the clerical missionaries, and it is urged that all who have not done so will write to the Tract Society, which is kindly publishing them, for copies of all that are already issued.

Members were reminded that the triennial meeting of the parent Association is to be held in January 1913, and that the monthly meetings of the Central district are held at 3 p.m., in the compound of the Severance Hospital in Seoul, on the second Tuesday of every month, and that all are welcome and urged to attend them when possible.
THREE POINTS IN THE TREATMENT
OF ANKYLOSTOMIASIS.

These cases now come in such numbers that a routine treatment is probably adopted in most hospitals; the details being left to assistants. It may therefore be worth while to mention certain points easily overlooked.

1. B-naphtol, while perhaps the safest and most generally useful drug, is contraindicated in advanced cases with marked renal insufficiency. It always increases anasarca; sometimes alarmingly so. For these cases thymol is better.

2. The Chinese digestive tract is accustomed to a bulky diet with a large fecal residue. When, by purging and starving, we empty the intestines and then give a vermicide, the subsequent purgative often fails to act, or to act well. After trying many drugs I have now for a long time given croton oil. It is not usually too drastic, and leaves nothing to be desired. For women, and for men who are weak, we use Epsom salts.

3. Advanced cases cannot stand the starving and purging involved by three successive treatments at intervals of a few days. One treatment, if thorough, is said to expel about ninety per cent. of the parasites. After this give Basham's "mixture" and good food for, say, 2 fortnight before the second sèance.

C. C. ELLIOTT, M.D.
C. I. M., Paoning, Szechuen.

RECENT INVESTIGATIONS IN THE
ETIOLOGY OF BERI-BERI.

In 1896 Eijkman discovered that exclusive feeding of fowls on certain diets led to the production of multiple peripheral neuritis, and many observers have extended his results both to other species of animals and to other diets. Special interest attached to these results when Braddon called attention to the fact that the incidence of beri-beri was closely connected with the variety of rice used as the staple food by the various Eastern races, and it has been shown that any rice which produced tropical beri-beri would also produce polyneuritis in fowls. Fletcher and others have proved conclusively that tropical beri-beri depends alone on the use of rice which has been deprived in preparation of the outer layers, including the pericarp, and is independent of infection, etc.

Holst, investigating the diseases of scurvy and ship beri-beri, which attack the crews of sailing ships, and are of great importance to Scandinavian nations, found that many articles used as food on ships cause neuritic and (or) hæmorrhagic lesions in birds and animals when used as exclusive diets; and he noted that white wheat bread and barley bread, and also preserved meats (if the temperature used for sterilizing rose above 120° C.) led to neuritis.

It may be briefly noted that pigeons die in some three to four weeks on diets of polished rice, white wheat bread, or barley bread; that the daily addition to any of these diets of 1.5 grams of rice meal, 5 grams of wheat bran, 1 to 2 grams of katyang bean, or 1.5 gram of yeast will suffice to prevent the onset of symptoms and to maintain their health and weight. Similar amounts rapidly and completely cure them when
reduced to the last extremity. Several months' continued feeding on such insufficient diets, with partial revival at times with protective substances, reduced a goat to a very low state in which revival even on a rich protective diet was slow. It showed, in addition to the usual lesions, degenerative changes in the central nervous system.

Rye bread (even fine), oatmeal, whole rice (paddy), and barley grain do not set up polyneuritis in pigeons.

Beri-beri does not occur in races using partly-milled rice, or in institutions where such rice is used. Its occurrence in certain instances has been proved to be large and constant if polished rice were used in the diet, and has been entirely abolished by the substitution of partly-milled rice (so-called "cured rice" vide Ellis, Fletcher, Fraser, Braddon, and others). Equally efficacious in its prevention or cure are additions of sufficient quantities of rice meal, peas or fresh meat—katyang beans, again, seem to possess the greatest favourable influence.

Frazer has found that the addition of an extract of the outer layers of the rice berry, an extract made with weak acid, added to polished rice, prevents beri-beri.

As to the nature of the bodies concerned, it is at present impossible to give a conclusive answer. While the experiments of Schumann and of Edie and Simpson favour the view that it is the lack of organic phosphorus compounds, the Japanese researcher, Ternuuchi, tells us that he has found an extract of rice-bran, made by him, most efficient in preventing the neuritis which occurs in animals fed wholly on polished rice, and that this extract does not contain a thousandth part of the phosphorus originally present in the bran. He therefore concludes that the essential substance is something other than an organic phosphorus compound.

Further experiments in Liverpool have shown that the active substance in the subpericarpal layers is not a phospho-protein, but a glucoside—possibly a galactosan, for these layers are particularly rich in galactosans in all cereals.

Recently Messrs. Chamberlain and Vedder (Philippine Islands) have found that polyneuritis established in fowls by feeding on polished rice can be combated and prevented by a daily ration of an alcoholic extract of the rice meal from the separated pericarpal layers, containing only 0.16 milligram of phosphorus pentoxide, and 4 milligrams of nitrogen.

These results have been confirmed in Liverpool on pigeons which had heavily lost weight and were suffering from polyneuritis due to exclusive feeding on polished rice.

This result tends to support the view that the active body is a glucoside in the pericarpal layers. Such bodies are present and well known to botanical chemists in the subpericarpal part of all cereals; they are known as hemi-celluloses, and are termed pentosans or galactosans, according to whether they yield a pentose or galactose on hydrolysis.

P. B. COUSLAND.
SUBPHRENIC ABSCESS.

Dear Mr. Editor:—Subphrenic or sub-diaphragmatic abscess can be so serious an operation that I venture to bring the subject up. In Rose and Carless' Surgery the subject is briefly dealt with, and by a foot-note reference is made to a masterly study of the subject by the late Mr. Harold L. Barnard. See British Medical Journal, February 15th and 22nd, 1908.

The subject is so clearly dealt with by one of large experience that I have copied out and enclose the portion of it dealing with treatment. The whole article is a magnificent one, but perhaps too long to reprint.

I have happened to come across several cases of subphrenic abscess.

No. 1. I helped the late Mr. Patou, at Mildmay Hospital in London. Part of a rib was excised and a tube inserted. The lad had a very bad time and lung collapse followed; from the opening, by a mirror, one could see right along the top of the liver for several inches. The lad finally coughed up the remains of his empyema and recovered. The pus had started below the diaphragm and worked up.

No. 2. Was in China, showed a bulging below the right costal margin, ant. axill. line. After letting out a large lot of pus, in about 3 days lung collapse followed; resection of rib did no good and he died.

No. 3. Pointed on the left side below the costal margin. The spleen could be felt floating in the pus. He made a quick recovery.

No. 4. Pointed between 2 ribs right mid axillary line and being in a very bad way was only aspirated several times. He finally died in native hands.

No. 5. Pointed in the loin high up under last rib: the liver could be plainly felt, also the diaphragm. He is still under treatment.

Case No. 2, was a very terrifying one to the friends. It was some five years ago. I had not read about this liability of the liver and diaphragm falling away and so letting pus into the pleura, therefore the event was not even feared. The treatment should have been by getting a finger into the cavity and so pressing the diaphragm against an intercostal space; while holding it thus stitch firmly to the chest wall with catgut. Before, however, even opening put in two preliminary stitches with a sharply curved needle on a handle to hold the diaphragm steadily against the chest wall lest an escape of pus occur during the opening.

So much of our surgery is concerned with pus collections in various parts, that really our best instrument should be an exploratory needle, yet I have been in more than one large hospital where there was not such a thing. Some poor substitute, thoroughly out of order, was offered. Mr. Barnard used a needle by Krohne and Seseman: near the London Hospital. Just now I am reduced to a Record; it is splendid but very expensive. You need a needle that can go into a pleura or liver without hesitation, one easy to clean and with an easily seen glass barrel. Don't have any antiseptic in the needle; use it straight from the boiled water or the blood curdles and misleads you.

Before closing I shall refer to another abscess, which is among the serious ones and of which I get a large number. The last one I did yesterday, so shall describe his case. He came complaining of intense pain over the hip joint and
immediately above it; it was very tender to pressure, he couldn't straighten the leg and had been laid up a month.

The gluteal region revealed nothing. I had needled many a gluteus with no result so didn't go to the trouble. Feeling then along the iliac crest I found that on the affected side the crest was thicker; the thickness being on its inner surface; about \( \frac{1}{4} \) inch extra thickness; also very slight oedema on pressure. The thickness extended below the anterior crest to some 2 inches of Poupart. On deep pressure there was very slight pain, but nothing compared with that on the gluteal region. Needling revealed an empty space between the iliac bone and overlying muscle and a very little pus. I cut down carefully keeping close to the iliac bone. Going down some 4 inches toward the pelvis suddenly pus welled out. There was no counter opening possible so a tube was put in. It may be due to elephantiasis—which is common—that deep glands of the pelvis suppurate very commonly on the muscle (iliac). Some few one can trace to appendix. If there is a thickening above Poupart, I always, after opening, try and get a counter opening back in the loin, below the ribs, and have a special long pair of forceps which can be pushed through and cut down on from the loin.

Get the tubing fixed in the forceps and pull through back again. Without this loin opening they are apt to burrow all over the place. One man in just now, came in late, and his abscess is discharging per rectum as well as by the opening above Poupart; a second man left to-day, he had no back opening as one couldn't be made. He has done well. A lad who came almost in extremis, came in last week, both legs unable to move due to fixation of psoas and iliacus; the abscess appeared below Poupart on one side and in the thigh the other side. He was beyond help.

Yours sincerely,

EDWARD F. WILLS.

P.S.—Could we hear more on subphrenics from those who have met it?

TSAOSHIH, Sept. 26th, 1912.

SUBPHRENIC ABCESS, by H. L. Barnard, M. S., F. R. C. S. (Extracts from British Medical Journal, February 22nd, 1908.)

OPERATIONS FOR OPENING.

The Posterior Transpleural Thoracic Operation.—As far as possible this operation is carried out in the line of the angle of the scapula with the patient semi-prone. The exploring needle is inserted through the intercostal spaces in turn from below up beginning at the 10th space. When pus is found, 3" of the rib below is resected whilst an assistant presses up the liver on the right side to obliterate the pleural cavity should it be open. The diaphragm is then firmly fixed to the intercostal muscles with 3 or 4 interrupted catgut sutures inserted by a sharply curved needle in a handle. Pus is then once more found with the exploring needle before the diaphragm is incised and a finger passed into the abscess cavity. This finger should hook the diaphragm well up against the thoracic wall whilst the pus escapes and before it is withdrawn the diaphragm and intercostal muscles should be sewn together by a continuous catgut suture. This should be done whether adhesions are present or not for as the abscess emptied and the diaphragm descended, the adhesions gave way in 5 cases in my series and pneumo-thorax resulted, in 2 cases.
at the operation, in 3 cases after a
day or so. (Use catgut.)

As large a drainage tube as is
convenient should be employed, and
irrigation, suction, and position
may be employed to clear the cavity
after a day or two. No rib higher
than the seventh should be resected,
for great difficulty will then be
found in bringing the diaphragm up
to the thoracic wall.

*Posterior Sub-pleural Thoracic
Operation.*—Take the same precau-
tions to guard the pleura from air
and pus.

*The Median Abdominal Opera-
tion.*—This route is usually
adopted when a strictly median
swelling is pointing in the epiga-
strium and when the exploring
needle has shown that the pus can-
not be reached from behind.

*The Loin Operation for Sub-phrenic
Abscess.*—The right loin operation
is adapted to the drainage of the
early and diffuse infections of the
sub-hepatic pouch and the right
anterior intra-peritoneal fossa when
the liver is not firmly adherent to
the diaphragm. At all stages it is
the method to be selected for the
drainage of the sub-hepatic pouch.

On the left side it is employed
alone for the diffuse stage of
peritonitis. In some cases, where
a very large left anterior intra-peri-
toneal subphrenic abscess has been
opened in the left epigastrium and
projects sufficiently below the ribs,
may be counter opened in the
left loin.

The incision is an oblique one
downwards and forwards, far back
and high up in the loin. When
the peritoneum is opened, should no
adhesions be present, the general
peritoneal cavity is packed off with
gauze below and in front. The
index finger then feels for the
margin of the liver on the right
side, and is passed transversely
below it into the sub-hepatic pouch,
into which a drainage tube can then
be introduced. Should the signs
indicate the presence of pus in the
right anterior intra-peritoneal sub-
phrenic space, and in all doubtful
cases, the finger is then insinuated
between the liver margin and the
diaphragm, separating the adhe-
sions. A drainage tube is then
introduced up the side of the finger
and pushed up under the dome of the
diaphragm as far as it will go, a
distance often of 6 or 7. Should
a lumbar abscess be present a tube
may be passed down the loin. On
the left side, feel for tail of the
spleen, and tube is pushed up into
the left intra-peritoneal fossa.

*Methods of Irrigation, Suction, and
Position in Dependent Cavities.*—A
subphrenic abscess opened from the
front. Largest size of drainage
tube 3/4 passed to the bottom of the
cavity, a strip of gauze inside of this
to soak up the fluid into the dress-
ings. Wash out twice daily with
sterile water or carbolic (1—100)
through an elastic catheter passed
down the inside of the drainage tube
to the bottom of the cavity. The
cavity should then be sucked by the
same catheter applied to a syringe.
At intervals during the day the
patient should sit up and lie semi-
prone on the opposite side to the
abscess cavity...
**Personal Record.**

**BIRTHS.**

On Friday, December 13th, at the Wesleyan Mission, Hankow, to the Rev. Dr. and Mrs. W. Arthur Tatchell, a son.

In England, October 15th, to Dr. and Mrs. G. A. Charter, E. B. M., a son (Norman Arthur).

**MARRIAGE.**

AT Tamsui, Formosa, November 22nd, Dr. D. Landsborough, to Miss M. Learner, both E. P. M.

**ARRIVALS.**

September 24th, Dr. W. T. Clark and family C. I. M. (ret.); Dr. and Mrs. R. V. Taylor, S. B. M.

October 20th, Dr. Houghton and family, Harvard Medical School; Dr. C. A. Siler, for Y. M. C. A.

November 5th, Dr. R. C. and Mrs. Beebe, M. E. M. (ret.).

November 14th, Dr. G. W. Guinness and family C. I. M. (ret.).

December 4th, Dr. Agnes Edmonds, M. E. M. (ret.).

**DEPARTURES.**

September 25th, Dr. H. G. Barrie and family, of C. I. M., for England.

October 15th, Dr. W. R. Cunningham, of A. P. M., for U. S. A.

November 23rd, Dr. Agnes Carothers, A. P. M., for U. S. A.

**NOTICE.**

The Secretary has two feather-weight Burroughs and Wellcome travelling medicine boxes to give away to any one who can make good use of them. Size 15" X 10" X 10". The boxes are of metal and the contents tabloid. Nothing more convenient for itinerating can be obtained.

Any one wishing for same please apply to Dr. Davenport.