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ROBERT EDWIN WORLEY, M.D.

Drowned at Swatow, June 27th, 1907.

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PRESENT PROBLEMS OF TYPHOMD FEVER, CLINICAL AND SCIENTIFIC.

By Edward H. Hume, M.D., Changsha.

It is very easy for us who read of the constant presence of typhoid fever in Western lands to excuse ourselves from an energetic crusade against this modern Minotaur on the ground that we certainly cannot hope to do more in China than health boards do at home. But is it not time that we stirred ourselves out here to better methods of diagnosis so as to avoid the issuing of statements such as have been publicly made this year from two mission hospitals in China to the effect that typhoid was one of the diseases not seen in that part of the country referred to? Instead of puzzling ourselves over the source of infection in sporadic, apparently isolated cases among foreigners, shall we not rather rouse ourselves to realize that typhoid is common enough among the Chinese? I have only to remind you of the word uttered on this point by Dr. Hodge at the Medical Conference in Shanghai in April, and to give you, in addition, one concrete instance. At the Pinghsiang collieries, in a hospital with but twenty-five beds, Dr. Kreyenberg reports at least 25 cases during the first six months of 1907. How commonly the diagnosis is missed at home may be inferred from the report for 1906 of the Metropolitan Asylums Board of London.* Of 30,228 cases admitted, 2,151 were found not to be suffering from the disease certified, an error of over 7 per cent. While the error among cases certified as scarlet fever was 5.2 per cent., and as diphtheria 18.3 per cent., the error among those certified as typhoid fever was

33.7 per cent! It is obvious that much has yet to be done in the perfection and universalizing of accurate methods of diagnosis. I hope to present, in this paper, a brief summary of recent work on the nature and manifestations of typhoid fever, and to show that the bedside and laboratory methods used in its recognition and treatment in Europe and America can be adopted in China; some of them by us individually in our own hospitals; and all of them with the co-operation of the Shanghai Municipal Laboratory or of the laboratories gradually springing up in other medical centres in China.

I. PATHOGENESIS.

We are still some distance from a correct understanding of the nature of typhoid fever. We have made progress since the days when it was considered to be due to miasms; and we are well aware that the term "enteric" fever is hardly an appropriate one when the enteric lesions are but one manifestation of the activities of the toxin that is circulating throughout the system. Allow me to refer to the two most modern views as to the nature of this disease. The first is that of Ewing,* who believes that "the degenerative changes in the liver, kidneys and lymphoid organs, while initiated by the bacterial proteids, possess certain self-perpetuating tendencies," and that therefore "typhoid fever is a combination of specific bacterial intoxication and a somewhat peculiar auto-intoxication; the former element being more prominent early, the other later in the disease, but both developing simultaneously."

It has been argued against this view that "convalescence is established immediately upon disappearance of bacilli from the blood and is probably not interrupted except as a result of a fresh growth of bacilli; and that Ewing's position is untenable unless it can be shown that symptoms of typhoid fever would persist after the complete destruction of all bacilli in the body."

The second is the recently advanced theory of Coleman and Buxton,† whose studies have been so thorough and exhaustive that for me, at least, their theory becomes a working hypothesis. Their view of the pathogenesis of the disease is as follows: that it is caused by the destruction of vast numbers of bacilli in the blood, with the liberation of their endotoxins and the consequent reaction on the part of the host. When the endotoxins are liberated elsewhere in the body, e.g., in abscesses, the symptomatology is not that of typhoid fever. This conception of the nature of typhoid fever is borne out by analogy. It is

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* American Journal Medical Science, June, 1907, p. 901.
† Idem, p. 900.
known, e.g., that *B. paratyphosus* may infect the intestine and produce the clinical picture of gastroenteritis, but that when it invades the lymph organs and blood, it produces a disease clinically indistinguishable from typhoid fever. *Diplococcus lanceolatus* and the various streptococci furnish similar analogies in that they produce different affections according to the regions they attack.

Two factors seem to me to support their theory outside of their own experiments: (1) The gall bladder, the urinary bladder, and other organs are known to have been occasionally infected with typhoid bacilli without a previous or existent typhoid fever. (2) My own animal experiments with typhoid and paratyphoid bacilli have repeatedly shown that there may be no febrile manifestations and certainly no true signs of typhoid fever, though the inoculated animal may be infested with countless bacilli. This is true in anthropoid apes as well as in rabbits and guinea-pigs.

An analysis of cases of blood-culture in the successive weeks of the disease suggests the following relation of the bacillemia to the course of the fever. "In the earlier stages the bacillus invades the blood in greatest numbers. Later, as the disease is approaching a favorable termination, the diminution in the number of bacilli in the blood is simply an index of less active development in the lymphatics and spleen. If the disease in any case pursues a long course, beyond the usual three weeks, the bacillus may be recovered from the blood as long as the temperature persists. There appears, then, to be a definite relation in the evolution of typhoid fever between the symptoms and the bacillemia. The increasing intensity of the symptoms in the earlier period of the disease corresponds to active growth of the bacilli. They invade the blood stream in increasing numbers and are there destroyed. Then comes the stationary period, when the ratios of growth and destruction appear uniform. The steep curve period corresponds to the diminishing bacillemia and defervescence to the complete disappearance of the bacilli from the blood. In other words, the duration of the febrile movement is measured by the persistence of the bacillemia." *

To sum up, typhoid fever can no longer be regarded simply as an infection of the body with typhoid and related bacilli (*B. paratyphosus*, etc.). The typhoid bacilli may be present in the body and actively growing, but the patient not have typhoid fever. The clinical picture of typhoid fever results only from infection of the lymphopoietic organs by the typhoid bacillus, with invasion of the blood stream and destruction there of vast numbers of bacilli. The bacillemia does not

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*American Journal Medical Science* June, 1907, p. 900.
constitute a true septicemia, but represents an overflow from the lymphopoietic organs.

The relapse in typhoid fever is explained by Coleman and Buxton as follows: "Reinvasion of the blood with destruction of the bacilli probably cause the symptoms of a relapse, but the underlying conditions which inaugurate active development of the bacilli, after their growth has once been brought under control, are unknown. We feel safe in asserting that a relapse is not due to reinfection with typhoid bacilli from the intestine as the result of intestinal trauma, brought about by dietetic irregularities. We do not wish to intimate, however, that we believe the occurrence of a relapse is entirely independent of diet."

II. ETIOLOGY.

The most important advance in our knowledge of the manner in which typhoid fever is spread, lies in the observation that a measurable percentage of persons who have recovered from typhoid continue to be chronic "carriers" of the disease. In one case reported in 1906, bacilli were isolated from the dejecta forty-two years after a known attack of the fever. At three laboratories in Germany three per cent. of 1,700 persons were found to be chronic "carriers." This observation is so suggestive as to the etiology of what we often consider to be obscure cases that I shall refer in detail to two special reports. In a German asylum with 900 inmates, typhoid and acute dysentery were both endemic; most of the cases occurring in a certain pavilion with 250 inmates. Typhoid bacilli were found in the stools of a patient with acute dysentery. Her serum agglutinated B. typhosus in a dilution of 1:100, and that of dysentery (Flexner type) in a dilution of 1:800. At the autopsy of another patient who died of chronic dysentery, B. typhosus was isolated from the intestine and in pure culture from the gall-bladder which contained gall-stones. B. typhosus was agglutinated by the patient's serum 1:50, and the Flexner type of dysentery bacillus 1:100. Further investigation revealed five more carriers of bacilli, making a total of seven among 250 patients. In another pavilion two more carriers were found. In both pavilions, after isolating the discovered carriers, typhoid ceased to be endemic.*

The most striking and instructive instance in the literature of the part a healthy person may play as a chronic typhoid fever producer was published in June, 1907.† Six persons in a household of eleven developed typhoid fever between August 27th and September 3rd, 1906.

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† Jour. of the A. M. A., June 15, 1907, p. 2,019.
Careful examination excluded the water, milk, vegetables, fruit, and soft clams as possible sources. There were no cases in the town immediately preceding or following those studied, and none of the patients had been away for several weeks before they fell ill. There was, therefore, no question but that the disease had been acquired on the premises, which, however, were found in a thoroughly hygienic condition. On August 4th, a change of cooks had taken place, and the new cook remained with the family for three weeks before and three weeks after the outbreak. An investigation of her previous career showed that, although the record for nearly two of the past five years had not been completed, twenty-six cases of typhoid, including one death, were associated with her services in seven families during this time. Indirect information indicated that she herself had had a mild attack. On March 11th, 1907, the cook, who was a large healthy Irish woman, forty years of age, was taken in charge by the Department of Health of New York city. The urine was found free from typhoid bacilli, but the stools showed great numbers practically every day for six weeks and the blood gave a positive agglutination reaction. The case illustrates admirably the care and thoroughness necessary in order to discover the results traceable to bacillus-carriers, whose rôle in the dissemination of typhoid fever must always enter into consideration now wherever the source of an outbreak is in any way obscure."

Two further cases will help to emphasize still other sources of infection that must be guarded against. One is that of a laboratory assistant to Achard, † whose duty it was to carry urines from ward to laboratory, and who became infected from the carrying of typhoid urine, as did also the interne who examined the specimen. The other is an interesting case reported from St. Thomas's Hospital in London.‡ A man, age twenty-eight, had typhoid fever in July, 1902, was operated on for perforation of the ileum and recovered. He was discharged September 10th, but readmitted September 18th, complaining of pain in the right femur and knee. Potassium iodide and external applications gave relief. On October 18th, 1904, he was readmitted with pain in the femur; on November 6th, he was operated on for periosteal abscess, from which B. typhosus was isolated in pure culture. He was discharged December 21st, with a healed wound, but the sinus reformed, and he was again admitted in June, 1905. At about this time his wife, who handled his dressings, fell ill with typhoid and died. From the

* Presse Medicale, 1907, XL, No. 5.
‡ Lancer, July 7th, 1907, p. 26.
open sinus in the man's femur which his wife was obliged to dress, B. typhosus was isolated in pure culture.

In this connection reference must be made to two cases that show how even little children, without clearly marked symptoms, may be harboring and spreading typhoid infection. In one case the patient was only sixteen months old.* There had been definite cases of typhoid in the household, and finally the infant itself had an illness with prolonged but moderate temperature, with gastro-intestinal symptoms, complicated by pneumonia. The Gruber-Widal reaction was positive only after some weeks. After two weeks of normal temperature, the infant was sent to another city, where it entered a home, previously uninfected. Three weeks later two of the children there came down with typhoid and two weeks later still another. No source for the infection could be traced. The other case † was that of a girl of seven and half years, who had an indefinite illness for thirty days before removal to hospital, and from whom six other children between one and half and nine years of age became infected. They lived in flats and were in the habit of playing together in the lobbies. No adults became infected. The importance of records such as the above can hardly be overestimated in guiding us to surer methods of prophylaxis.

III. PROPHYLAXIS.

The following rules should be laid down:—‡

1. Become thoroughly acquainted with all known methods of infection with the typhoid bacillus: (a). Food and water contamination, either directly from the dejecta of patients or by flies. (b). Contact with the clothes, belongings, or dejecta of patients.

2. Prevent infection of the patient: (a). Guard the water-supply. (b). Guard the dejecta of patients from flies. (c). Guard against contagion.

3. Prevent the escape of the infective agent from the patient. (a). Sterilize the urine. Allow 200 c.c. of 1:1000 bichloride solution to stand in a covered jar. The patient’s urine should be poured into this and allowed to stand for two hours. 200 c.c. of bichloride solution will sterilize 3,000 c.c. of urine. In another vessel keep a strong solution of bichloride or carbolic acid for sterilizing the urinal. Urinals for typhoid patients should be strictly isolated. It is to be noted that urotropin does not sterilize the urine, but does prevent multiplication of bacilli. 2.0 grams should be given daily, divided into three or four doses. (b). Sterilize the feces. Add to each dejection twice its volume of carbolic solution 1:20, stir well and allow to stand for two hours. The bedpan, when not in use, should be immersed in a strong disinfectant or boiled. (c). Sterilize the bath water. Add to each tub a half lb. of chlorinated lime and allow to stand for half an hour. (d). Sterilize all dishes and utensils by boiling.

To the above rules should be added one more, namely,

4. Recognize your cases early.

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* Archives of Pediatrics, March, 1907.
‡ Cf. article by W. S. Thayer, Maryland Med. Journ., 1907.
A printed sheet with the above rules, hung near each typhoid patient, and constantly re-emphasized by the physician, would do much toward preventing the spread of the disease. An interesting experience has been recently recorded by Dehler,* who made use of the observation that bacilli might be excreted by apparently healthy persons for long periods. His patient was an insane woman, and, before the discovery that she was a carrier of typhoid bacilli, she had infected a number of other persons. Extensive rectal prolapse and a constant tendency to diarrhoea, with much mucus and blood-streaked scraps, increased the danger of infecting others and of complications for herself. There were no symptoms from the gall-bladder, but typhoid bacilli were discovered in the stools in 37 out of 39 examinations. The gall-bladder was loosened from adhesions and opened. Two gall-stones, the size of cherries, were removed. One of the stones had been obstructing the cystic duct. The bile flowed so freely after taking out this stone that removal of the gall-bladder, or drainage of the hepatic duct, seemed unnecessary. A tube was inserted in the cystic duct and recovery was uneventful. With one exception, when a few bacilli were found in the stool, soon after the operation, the stools have since been permanently free from typhoid bacilli. None were ever found in the blood or urine. The patient has also been free from diarrhoea since the operation. The agglutination test has persisted positive at 1:100. The typhoid bacilli were evidently dislodged from the gall-bladder when the flow of bile became regular without stagnation.

IV. IMMUNIZATION.

It is not at all impossible that we shall see the day when inoculation against cholera and typhoid will be as common as inoculation against plague is in India, and perhaps even as common as vaccination is elsewhere. A recent report on anti-typhoid inoculation shows definite improvement over the results recorded in connection with the South African war six years ago.† Among 324 non-inoculated patients, there was a mortality of 11.1 per cent., while among 100 inoculated patients there were but four deaths. The illness was more severe and the complications more numerous among the non-inoculated. Severe cases among the inoculated were only seen if developing shortly after inoculation.

Still more recently Eichholz‡ has reported the course of typhoid fever in 68 men, half of whom had been previously treated with anti-typhoid serum. There was no mortality among the immunized, but

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† Archiv. f. Schiff u. Tropen Hyg., 1905, December.
‡ Munch. Med. Woch., LIV, No. 16.
three of the non-immunized patients died. Severe complications were observed in three of the former and in seven of the latter group. The height and duration of the fever were much less marked in the immunized.

V. DIAGNOSIS.

In 1896-7, a most important step was taken towards associating laboratory diagnosis with bedside recognition of typhoid when the Gruber-Widal test was made public. Since that time the greatest contributions to the study of typhoid fever have been along this one line of diagnosis. Granted an early diagnosis—and that is where the Gruber-Widal test disappoints us—it would be so easy to lay down rigid rules of prophylaxis and to institute wise treatment early. Of recent progress in the bedside diagnosis of typhoid there is little to say. One sign, noted first by Philipowicz in 1903, has been lately referred to again, *namely, a yellowish discoloration of the palms of the hands. A number of Italian observers regard the sign, while not peculiar to typhoid, as highly suggestive, and in one case an early diagnosis was reached mainly by means of this sign. Again, Rollestone† draws attention to the loss of the abdominal reflex, and says that in persons under fifty, this occurs only in certain nervous diseases and in acute abdominal conditions, notably typhoid and appendicitis. "Hence the inference that in a patient under fifty suffering from an acute fever, and showing no abdominal reflex, the disease is probably typhoid fever." In 45 cases of typhoid the reflex was affected in 43, being lost in 37 and impaired in 11. "In typhoid fever the infra-umbilical reflex is the first to disappear and the last to re-appear. The supra-umbilical response may be active throughout the disease, or more commonly responds slightly and becomes rapidly exhausted by a few stimuli. Re-appearance of the reflex or an increase in its activity indicates improvement while persistent absence, in spite of lysis, suggests that a relapse is imminent."

LABORATORY METHODS.

The serum reaction continues to hold a most important place in typhoid diagnosis. Judging from the experiences with blood-cultures about to be referred to, one is led to feel, a priori, that typhoid bacilli are always present in the blood before serum reaction develops, for the reason that endotoxins must be liberated before agglutinins are formed. The truth of this is shown in an analysis of 391 cases reported in five

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†Bram, 1906, XXIX, 99.
papers, 94 of which showed bacilli in the blood, but gave no serum reaction.* For the complete diagnosis of an obscure case by the serum reaction the test should be frequently repeated. The test itself can be readily made by every physician, however remote from a laboratory, by means of the outfit supplied by makers in Europe and America.† It may be mentioned that in the only case the writer was able to examine after the apparatus came to hand, a negative result was obtained in a case that at first seemed clinically to be typhoid, but which, later on, proved to be clinically unlike that disease.

Reference has already been made to the presence of typhoid bacilli in the blood early in the disease. This has naturally led to the use of blood cultures as a means of positive diagnosis. A most complete résumé of such examinations has been recently published by Coleman and Buxton, who tabulate the findings in 1,602 cases. In 1,197 of these, i.e., 75 per cent., typhoid bacilli were recovered from the blood. The examinations were made at all stages of the disease and by different methods. Since the use of bile-containing media is the only method that can be confidently depended upon, so large a percentage of positive results goes far to prove that the bacillus is present in the blood in practically all cases of typhoid fever. An analysis of the examinations by weeks shows that of 224 examinations in the first week of the disease, 200, or 89 per cent. were positive. The earliest positive result has been recorded by Widal, who recovered the bacillus from the blood on the second day of the disease. The reported positive results become more frequent as the end of the first week is approached, only, we believe, because the disease is not suspected earlier and the examinations made, or because the cases do not come under observation.

Second week: Of 484 examinations made in the second week of the disease, 353, or 73 per cent., were positive.

Third week: Of 268 examinations made in the third week, 178, or 60 per cent., were positive.

Fourth week: Of 103 examinations made in the fourth week, 39, or 38 per cent., were positive.

After the fourth week: Of 58 examinations made after the fourth week of the disease, exclusive of relapses, 15, or 26 per cent., were positive. Since the introduction of the bile method, Coleman and Buxton,‡ like Busquet, Conradi and others, have had practically 100 per cent. of positive results. Their technique is as.

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† 1. Typhoid Agglutometer, No. 2. Parke, Davis & Co., Detroit, U. S. A.
‡ Ficker's typhusdiagnostik, E. Merck, Darmstadt, Germany.
follows: 10 c.c. of blood are drawn into an all-glass syringe from a vein at the bend of the elbow. A mixture is made of ox-bile 90 c.c., glycerin 10 c.c. and peptone two grams, distributed into small flasks, 20 c.c. in each, and sterilized. Three of these flasks are used for each examination; about 3 c.c. of blood being run into each. The flasks are then incubated, and the next morning streaks are made from each flask over the surface of a litmus-lactose-agar plate. If microorganisms are present, a growth may be observed in five or six hours. If the growth does not redden the medium, and is found to be a bacillus resembling the typhoid organism, it is tested for the Widal reaction with immune serum. By this procedure it is often possible to determine whether or not the case is one of typhoid fever within twenty-four hours after drawing the blood. Conradi’s* most recent method of procedure calls for even less blood. He receives the blood directly from the ear into the bile-glycerin-peptone mixture, which is contained in a capillary glass tube, and after thorough mixing, the contents of the tube are emptied into the larger tube (holding 2 to 3 c.c.), and this is repeated till all the blood which flows from the little wound in the ear is mixed. The proportion of blood to the entire liquid must be kept as low as 1: 3. The mixture is kept in the incubator at 37° C. for from 16 to 32 hours, and then plated on the Drigalski-Conradi medium (Lactose-litmus-agar, with nutrose and crystall-violet).

The object of the ox-bile is not only to hinder the coagulation of the blood but also to hinder the growth of other organisms than those such as B. typhosus, B. coli, etc., which are strong growers. Müller and Graff† have been trying to devise some other method by which blood could be kept fluid long enough to permit of its transfer to a laboratory. They found that hirudin, a trade name for an extract of leeches, kept the blood fluid and did not kill the bacteria. They found, later, that blood-clots could be used satisfactorily; the bacilli being entangled in the clot. Conradi,‡ continuing this study, finds that the clot from 0.2 c.c. (four drops) of blood will give cultures that enable the diagnosis to be made in fifty per cent. of cases. He draws out the thread of clot with forceps, puts it in a tube containing 5 c.c. of his bile-mixture and incubates from 12 to 16 hours at 37° C., then spreads with a spatula, 0.1 and 1.0 c.c. on dried plates of lactose-litmus-agar.

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† Progressive Med., March, 1907, p. 325.
Perhaps even more remarkable is the method of Poppelmann,* who reports the demonstration of the bacilli in blood smears. The smears are made in the ordinary manner and then stained by the May-Gruenewald method. Poppelmann claims to have gotten much better results with this stain than with any other. If this last observation shall be confirmed, greater attention than ever will have to be paid to the avoidance of infection from slight cuts in the patient's skin, or from lesions in the mouth and elsewhere. It is well enough known that typhoid bacilli may be regularly recovered from rose-spots. Those who are willing to resort to splenic puncture probably get a larger percentage of early diagnoses than other observers; one hospital reporting 94.4 per cent. of successful results.† Before leaving the subject of diagnosis, a word must be said about typhoid opsonins. During the early period of the disease, the opsonic index is high, and this fact will doubtless add one method of confirming the diagnosis in doubtful cases. The index varies from day to day, falls as the temperature begins to fall, and increases again during convalescence.‡

VI. TREATMENT.

A recent report from the von Jaksch clinic.§ only confirms the growing belief that the only manner in which a low mortality rate can be consistently attained apart from serum treatment, is by the systematic use of the bath-treatment. Where these are given, it is a matter of common observation that the use of antipyretics and other medication is dispensed with as a routine. Let me remind you that aside from serum treatment a mortality rate of but 7.5 per cent., including every case admitted, even though moribund, and covering a long series of years, has only been reported from two hospitals; one of them in New South Wales and the other in Baltimore, U. S. A.|| At these two hospitals the routine treatment consists of a tub-bath at 85°F. every three hours if the temperature is 103.5°F. or over; the temperature of the water being gradually reduced in later baths if thought wise in the individual case.

Chantemesse,¶ of Paris, has faithfully continued his use of antityphoid serum, and in his last report contrasted the results in treating 712 cases over a period of five years with those obtained in treating 3,595 cases in the various other hospitals of Paris over the same period. His

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† Zeitschr. f. Heilkunde, 1906, XXVII, ii, 14.
‡ Journ. of the A. M. A., 1906, XLVII, 2, 159.
¶ Osier; Practice of Medicine.
|| Presse Medicate, 1906, February.
mortality was 3.7 per cent., while among the cases treated by hydrotherapy and other routine means the mortality was 17.3 per cent. This difference in results cannot be accounted for by differences in the character of the epidemic, nor to good fortune in a short series of cases. The beneficial effects of the serum are shown not only by the reduction of the mortality rate to one-fifth of that obtained by other methods, but by the prompt fall of temperature, by the improvement in the pulse, by the increase in the amount of urine, by the shortening of the course of the disease, and by the smaller number of complications. There were nine instances of perforation among the 712 cases, all among those who entered the hospital late. Death has not been seen to occur in a patient who received the serum during the first week of the disease.

VII. COMPLICATIONS.

Reference might be made to a number of unusual complications of typhoid fever recently reported, such as helminthiasis; the continuance of the fever being regarded as unfavorable to the life of worms, orchitis, changes in the mesenteric glands, typhoid infection of the appendix, with successful removal of the organ during the course of typhoid fever, and so on. But I shall only dwell in detail on the matter of the detection of occult blood in the stools; such detection often serving as a warning of severe hemorrhages and as additional evidence of the severity of the process. In the feces of 50 cases, using both the guaiac and the aloin tests, blood was found in 14 cases, of which 7 were severe, 3 moderately severe and 4 mild. Of the 34 cases in which no blood was obtained, 11 were severe, 15 moderately severe, and 8 mild. In some cases traces of occult blood were found 3 or 4 days before gross evidences of hemorrhage were obtained. The use of a mild purgative was likely to be followed by traces of blood in the stool. The guaiac test was regarded as the more delicate.*

To sum up, recent studies on typhoid fever, to some of which allusion has been made in this paper, teach us two things in particular:—

1. That the spread of typhoid fever is a far more subtle thing than we have hitherto imagined; and that therefore those of us who have the care of cases are under a great responsibility to see to it that infection is not carried away from the patient; and if possible, to arrange for a bacteriological examination of his excreta before pronouncing him to be again a safe member of the community.

2. That the diagnosis of typhoid fever is constantly becoming more and more accurate, and that the means of making such diagnosis are within our power to use, especially so far as concerns the serum test. By the use of the blood clot, as indicated by Conradi, we can arrange for diagnosis by blood culture, even though at some distance from a laboratory.

**Appendix to Foreign Committee's Report—A**

### The Committee for Foreign Missions in account with James M. Brown, Treasurer.

#### 1881.

<table>
<thead>
<tr>
<th>Date</th>
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#### 1882.

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### JAMES M. BROWN, Treasurer for Foreign Missions of the Domestic and Foreign Missionary Society of the Protestant Episcopal Church in the U. S. A.

New York, September 1, 1881.

The undersigned Auditing Committee have examined the account of the Treasurer of the Foreign Missions, and believe the same to be correct as expressed in the above statement.

F. S. WINSTON, Auditing Committee.

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(a) Contributed by the Woman's Auxiliary for Insurance on the lives of married Missionaries.
(b) Salary of the Secretary, printing, postage, and stationery; Foreign Committee's proportion.
(c) Printing Reports, postage, etc., etc.; Foreign Committee's proportion.
(d) Cost of "Family Missionary Boxes," and their distribution.
(e) Including furniture for office, freight, insurance, postage, stationery, etc., etc.
A CASE OF INTUSSUSCESSION (CAECO-COLIC) AND REMARKS ON THE PATHOLOGY OF THE ACcompanyING TUMOUR.

By ARTHUR F. COLE, M.R.C.S., L.R.C.P., Ningpo.

On May 9th, 1907, a healthy looking woman, aged forty-one, a vegetarian Buddhist, came to the C.M.S. hospital, Ningpo, complaining of attacks of abdominal colic; these were increasing in frequency and severity daily, pain referred to umbilicus. The history was that the colic had existed five days, and during the last two there had been intermittent vomiting, independent of food ingestion. On close questioning it appeared that there had been a trace of blood in the stools occasionally. On examination a rounded moveable tumour was easily felt in the right iliac fossa. In size it gave one the idea of being as large as an emu's egg. The diagnosis of ileo-cæcal intussusception was made and operation advised. Had it not been for a very severe attack of colic which came on whilst we were urging our views upon the patient, this paper might not have been written. The agony caused her to decide upon immediate operation, and she allowed none of her relatives to dispute her decision. A strangulated hernia a few days before and a long sad line of similar surgical urgencies in which leave to operate had been given by patients and refused by relatives, made us wish all patients were equally strong-minded when necessary.

The abdominal wall was washed with ordinary soap and water, followed by turpentine, and a carbolic compress applied for two hours preceding operation. The umbilicus received special attention because of its special need. A soap and water enema was given previous to operation, and following this the tumour was found to be distinctly smaller than on admission. A two and a half inch incision was made as if for an ordinary appendix excision. Exploration within the peritoneal cavity revealed a long rounded mass, very difficult to manipulate. Finally it was maneuvered to the incision, and with some difficulty (after enlarging the wound) brought into view. The diagnosis was confirmed by the typical appearance of the intussuscipiens and intussusceptum, altogether about eight inches long. No great difficulty was found in reducing it, and though in appearance dusky red, the gut was considered likely to recover. The appendix (one and three quarters inches long) and caput ĉæci came into view when fully reduced.

Congratulating ourselves upon the comparatively easy reduction of the intussusception we were next led to observe that near the base
of the appendix the walls of the cæcum were puckered and hard and thickened. No glands were felt. It was suspected that it was a malignant growth acting as an initial factor in originating the intussusception. Nothing remained but the plain duty of excising the tumour and a portion of the cæcum. Intestinal clamps shut off the small intestine and the ascending colon. A long piece of boiled absorbent gauze was wrapped round the base of that portion of intestine which was outside the abdomen to shut off the peritoneal contents. With scalpel and scissors the whole suspicious portion of cæcum, together with a margin of healthy tissue, were removed. Bleeding was not very great. The appendix was removed in one piece with the cæcum; its own mesentery being ligatured in two portions. A specimen of *Trichocephalus dispar* was found lying in one of the rugae of the cæcum laid open; it did not appear to have transfixed the mucosa, but there were two small hæmorrhages visible. The portion removed was 4½ x 1½ inches, and projecting about ½ inch into the lumen of the gut there was a greenish-black tumour, rounded in outline, perfectly smooth and having a diameter of ¾ inches. The cæcum was stitched up with two rows of Lembert sutures of fine silkworm gut to ensure a watertight line of union. That portion of intestine outside of abdomen was washed with boiled rain water and then put back. The skin incision was closed with two layers of sutures of silkworm gut, peritoneal and superficial. A piece of boiled absorbent gauze was placed at the lower end of wound to act as a safeguard in case of intestinal leakage, and boiled gauze applied as dressings. *Morphia* gr. ¼ hypodermically. Sips of tea were allowed from the first, and forty-two hours after operation an ounce of rice gruel. On the third day nutrient enemata were discontinued, not being retained in spite of the usual precautions. In their place two ounces of rice gruel were given. On the fourth day seven ounces of gruel and tea *ad libitum*. Wind naturally passed gave great relief on the fourth day. On the fifth day a good motion, blackish with altered blood. Abdomen flat and no pain, wound looked very well. From the fourth day onwards temperature and pulse were normal. The only anxious time was on the second day, when the temperature was 101° and pulse 130. *Calomel*, gr. three, was given on the fifth day. Ordinary diet was allowed from the twenty-first day, and on the twenty-eighth day patient was placed on a couch. The patient had to go home six weeks after the operation, but was advised to give the scar freedom from strains due to heavy work.

A great portion of the interest in this case (as well as in the following) lies in the pathology. That the intussusception was recent is very
A Case of Intussusception (Cæco-colic).

probable, but the histo-pathology of the tumour makes one doubt whether it was as much older as one would naturally suppose.

Intussusceptions are rare in adults and common in infants. Mr. Harold Barnard, in a paper read before the Hunterian Society in 1907, deals with 187 consecutive cases at the London hospital, of this condition, in which 135 were under one year, 165 under ten years of age. No less than 131 were males. But an intussusception occurring in those who have passed the age of forty would suggest an exciting cause such as a tumour, as was found in this case. The point then arises as to the nature of this tumour. It is the practice in this hospital to submit all tumours excised to a microscopic examination. Because of the special interest in this case, a portion was also sent to Dr. Stanley of Shanghai for an independent opinion, together with the clinical history, as useful to a pathologist as to a consultant. (And in this connection we would ask if it is fair to send tissues of doubtful nature for an opinion, keeping back the essential clinical history. We would suggest that the natural inference is that the consultant pathologist is not to be trusted to give an unbiased opinion. In certain cases a history is of the greatest assistance in coming to a decision.)

To our surprise there was no evidence of its being malignant, but a very definite suggestion that it was factitious and recently produced. A hard rounded tumour projecting into the lumen of gut at a site where malignant growths delight to appear, with peritoneal puckering so marked as to strike even inexperienced eyes, would by most be damned at once as malignant. We were no exception. But microscopically it was seen to consist in the main of widely dilated spaces filled with leucocytes, red cells, and in places with a colloid material, perhaps of lymphatic origin. There is a marked round-celled inflammatory infiltration at the margin of the growth. The surface of the tumour is smooth and the ordinary glandular nature of the cæcal mucosa is replaced by a homogeneous mass of disintegrating cells with different staining properties from the deeper portion. Here and there a suggestion of the original tubular nature can be seen. The green colouration is probably from bile staining. The muscularis mucosæ is somewhat atrophic, but there is no evidence of malignant invasion. The sub-epithelial tissue is the chief site of the tumour, and what would appear to have been the case is that some constricting agent has caused the formation of a mass nearly one inch in diameter and projecting half an inch into the lumen of the gut. Possibly there had been the extraordinary condition of a reverse intussusception in which a portion of the cæcum became tightly engaged in the orifice of the ileo-cæcal valve.
with the circular muscle fibres of that valve in a state of tonic contraction, thus instituting a starting point for the ordinary peristaltic movements which would develop the main intussusception. We cannot say. If it does no more this theory forms an objective for criticism, with perhaps the hope of a less far-fetched solution of the problem. In view of important researches on atypical tubercular growths of the cæcum, we may add that though histologically extremely unlike that condition, sections were also stained by Metchnikoff’s method for tubercle bacilli and proved negative. The microphotograph was taken to show the dilated spaces which formed the main part of the tumour, and the homogeneous mass of disintegrating cells, replacing the ordinary tubular glands, can be seen at the surface. It would be ungrateful if I did not acknowledge the very great debt I owe to Dr. J. Jones for assistance given at the operation, and to Dr. Stanley for encouragement and advice in the pathological investigation.

CYCLIC VOMITING.

By H. W. Boone, M.D., Shanghai.

The disease to which I wish to call your attention is one that we meet with in practice from time to time. It will give us much anxiety, and until we understand it well, we will be uncertain as to the best methods of treatment in any given case.

It has been given the names of cyclic vomiting and of persistent vomiting, which only goes to show that no definite cause or lesion has been found for it. We do not know that it is a primary disturbance of the stomach. In many cases the causes of irritation may not be in the stomach at all but may be connected with the solar plexus.

The disease shows itself in attacks of vomiting which recur after intervals of uncertain length. In the intervals the person seems to have good health. The attacks usually last for three or four days, although they may last for a much longer period, and the patient may be in a condition of profound exhaustion with great loss of flesh. It may occur in very young infants and sometimes in adults. It is most common for the first attacks to appear between the ages of two and four years. The majority of these children are delicate and of a highly nervous temperament, and it often occurs among those who have excellent surroundings. It seems to occur in persons of a neurotic type. In the families of some there is a history of gout. These attacks are not due
Cyclic Vomiting.

to errors or excesses in diet, though an excess of carbohydrates, e.g., oatmeal or potato, is bad for them. Fatigue, unusual excitement, such as of a party, may bring on an attack; any severe shock, as a fall on the head, may excite it. Dr. William Pepper (page 23 Cyclopaedia of the Diseases of Children) says: “It seemed to me that the essential element in the production of recurrent vomiting is a state of nervous depression and irritation affecting especially the centres and fibres supplying and controlling the stomach and liver. I have known this condition to be established almost immediately by a nervous shock, or by excessive fatigue, though more usually it is brought on by the prolonged action of depressing causes. When once it is established, it requires comparatively slight influences to excite a spell. The symptoms indicate the existence of hepatic torpor in most cases, and not rarely a slight degree of gastric catarrh is associated. Probably it is the development of some irritating ptomaine which causes the explosion, or else it is a lowering of the already depressed innervation which violently disturbs the equilibrium of the gastrohepatic functions. The truth is that the underlying tendency above alluded to, however acquired, varies greatly in intensity in different cases, so that the causes needed to call it into action vary greatly in degree and vary also in kind according to the different susceptibilities of the individuals affected. The periodicity of the attacks is difficult of explanation. In some instances the spells recur at such irregular intervals as scarcely to merit the name of cyclical. They show only the existence of a continuous tendency which is aroused from time to time by the recurrence of exciting causes. In other cases greater regularity is noted, suggesting that the susceptibility of the nervous system is developed periodically under the operation of some rhythmic influence.” Max Einhorn (Twentieth Century Practice of Medicine, Vol. 8, page 343), says: “Periodic vomiting is characterized by the following points: 1. It appears in apparently healthy individuals. 2. The paroxysms occur periodically after intervals of equally long duration. 3. When the attack is over, the patient is perfectly well and no gastric symptoms persist. The periodic vomiting of Leyden is a rare affection, and it does not seem to me that the condition of the gastric secretion plays an important part in its causation.” Rotch (Pediatrics, page 841) says: “Unless the disease is unwisely treated by endeavouring to introduce food or drugs into the stomach, it will usually prove to be self-limited and will run its course in two or three days. Relapses occasionally take place.” Dr. Holt (Diseases of Infancy and Childhood, page 328) says: “One case showed a ratio of uric acid to urea of one to eighty-three during
the vomiting, while in the same individual in health it was one to forty-two.'" Another case showed similar results. He says: "Further observations are necessary before the full significance of these changes can be appreciated." Irving M. Snow (Amcr. Journ. Med. Sci., 1904, Vol. cxxviii, p. 966) records five cases in girls between three and ten years of age, and brings forward evidence that the attacks were due to an intermittent hyperchlorhydria. He regards cyclic, periodical or recurrent vomiting in children as not so rare as is supposed. States that it is relatively easy of diagnosis if the vomit be examined, and holds that in some cases the gastric irritability is due to an intermittent hyperchlorhydria, a secretory neurosis, causing the sudden hyperexcretion of free hydrochloric acid and gastric juice. In four of the cases the fluid vomited was apparently pure gastric juice with an excess of free hydrochloric acid and mucus. In the fifth case the hyperacidity was due to combined chlorides. The patients all recovered.*

Marfan has described the affection under the name of "Vomiting and Acetomina." He ascribed it to an intoxication, the odor of acetone in the breath and acetonuria being indicative of a toxaemia. Rachford found leucamines in the urine and believed the condition to be allied to migraine, a kind of lithæmic gastric neurosis. In his cases the recurrent vomiting was replaced by attacks of migraine in adolescence.

"First attacks are liable to be mistaken for simple acute indigestion, meningitis, appendicitis, or intussusception. Recurrence and rapid recovery in a few days in most cases establish the diagnosis, which can easily be confirmed by examination of the vomit. The acetone odor of the breath is of some value in diagnosis. Inflammatory or irritative lesions of the kidneys have been noted post mortem. The most efficacious treatment appears to be frequent large doses of bicarbonate of soda. In dangerous attacks: nutrient enemata, chloral by rectum and hypodermics of strychnia and morphia, may be necessary to tide the patient over a dangerous crisis. Most cases get well. The prognosis as to recurrence is very uncertain, for each attack may prove the last. B.K. Rachford (Archives of Pediatrics, December, 1904, vol. xxii., p. 881) contributes a paper on the subject in which he gives a summary of the affection. He states that a family history of migraine or gout is present in nearly every case and attacks much importance to constipation as an etiological factor. He accepts the intoxication theory and holds that incompetency of the liver is an important factor. H. Battyshaw and R. H. Tribe (British Medical Journal, 1905, p. 347) report a case in a girl aged eleven years. She had had periodic attacks of severe vomiting, seven in all, since the age of three years. The attacks lasted on and off
Cyclic Vomiting.

for a month and caused much wasting and weakness. On admission into hospital she was extremely wasted, weighing only twenty-four and a half pounds, listless and taking no notice of her surroundings. The teeth were carious, the neck and body much pigmented and the abdomen hollowed. The urine contained a large amount of acetone and some diaetic and B-oxybutyric acids. Vomiting occurred three or four times a day. She was fed by mouth and rectum, and large doses of bicarbonate of soda, 90-120 grains daily, were given. She gained six lbs. in weight in about eight weeks. The pigmentation largely disappeared and the general condition improved. The rectal feeding produced the best result. The writers give an analysis of fifty-five reported cases. F. Langmead (Brit. Medical Journ., 1905, p. 351) reports two cases. One, a girl, was under Dr. D. B. Lees for an attack, from which she recovered. She had had four attacks during the previous eight months. Six weeks later she had another attack, passed into a condition like diabetic coma, had general convulsions and died, with a temperature of 110°F. The liver was found enlarged and in an advanced state of fatty degeneration. Other changes post mortem were probably due to inanition, fever, and convulsions. The other case was a boy aged six years, with some mental deficiency. He had had ten to twelve previous attacks. The last was typical, but very severe. He recovered.

I. Porter Parkinson in the Brit. Journ. of Children's Diseases, No 4, Vol. 11, p. 177, gives a summary as follows: "Cyclic Vomiting" (La Clinique Infantile, Feb., 1905): Richardiere states the characteristics of this form of vomiting are: Crises of vomiting of food, bilious or watery materials, reproducing themselves with variable frequency and without apparent cause and attended by extreme exhaustion; drawn features; sunken eyes; and retraction of the abdomen. These crises last two or three days to as many weeks and stop suddenly. The breath has the odor of acetone, the temperature is sometimes raised, and occasionally there is jaundice, with pale stools and bile in the urine, the liver being enlarged. The author considers that the liver plays an important part in the production of these attacks, and that the acetonuria is a symptom of hepatic incompetence. Normally acetone is a product of tissue disintegration. It passes into the blood to be eliminated, and it is probable that the liver takes a considerable share in this process of elimination or transformation, and a disturbance of the liver function will naturally diminish its capacity in this respect." Langmead (Brit. Med. Journ., Feb., 1905) in reporting two cases says that acid poisoning occurs there can be but little doubt, but that it is the cause of the vomiting is far from proved. He has found both acetone and diaetic acid
in very evident quantities in the urine of several patients, during whose illness no vomiting has occurred, and in those in whom this symptom occurred he could never detect the acetonuria first. The very frequency of the presence of these products in the urine is against their ability of themselves to cause a comparatively rare condition, such as is recurrent vomiting. And in diabetes, in which acid poisoning often leads to a fatal issue, vomiting is a symptom little in evidence. The probable explanation is to be found in some antecedent condition causing the vomiting, and directly, or indirectly, the acid poisoning.

It seems to the writer that Langmead comes very near the truth when he says that "the very frequency of the presence of these products in the urine" (i.e., acetone and diacetic acid) "is against their ability of themselves to cause a comparatively rare condition, such as is recurrent vomiting. The probable explanation is to be found in some antecedent condition causing the vomiting, and directly or indirectly, the acid poisoning." Just so no one has yet found out what the cause of the disease is. They may be nervous explosions due to defective metabolism, resembling migraine in adults. Though these patients become so very greatly exhausted, so very much wasted from excessive vomiting and the lack of nourishment, there seems little danger to life. Not many fatal cases are reported. Nothing very characteristic has been found post mortem. The attacks are extremely liable to recur. As a rule the younger the patient the more severe and prostrating is the attack. By very careful diet and regimen between the attacks much may be done for these patients.

I give a typical case. F. D., girl, was born in 1901. When three days old she had a severe attack of vomiting and could take nothing for twenty hours. She had just begun to take the breast. Nursing stopped, and enemata of water were given. After twenty hours she was given sterilized water for a few hours, then began nursing again. After the attack was over she was much exhausted and emaciated. The mother's milk was plentiful, but watery with no cream. When the child was two months old the mother engaged a strong, red-cheeked young country woman as a wet-nurse for her. The child of this nurse was two months' old. For six months the child remained well. Then the wet-nurse left. After that she had poor nurses and was not well nourished. No form of food seemed to agree quite well with her until she got a good healthy wet-nurse again, when she was eleven months old. The child kept well until she was sixteen months' old, when she had a very severe attack. She was very constipated at first. Small doses of calomel and an enema produced free discharges, and melon seeds were passed in the stools.
Cyclic Vomiting.

The vomiting of watery mucus, and at times of a little bile, was very frequent. The child was so exhausted, so emaciated, that she seemed about to die. One-half teaspoonful of iced water or the same amount of hot water would be instantly ejected. She was supported through the attack by peptonized enemata given every five hours. When so very weak a little brandy in milk was given twice by the bowel; after the attack was over she soon regained her health and strength. Her diet was a generous one, but it was carefully planned. The food was prepared by her mother. She was kept out of doors a great deal and she slept in a well ventilated room. From this time on she had attacks of vomiting at intervals of two to three or three and a half months. They usually lasted for three days and left her in a very exhausted condition. She would lose three pounds in three days. The recovery was rapid; still it took some time before she was quite strong and able to take exercise, as her arms and legs were so wasted after each attack. In May, 1903, she had an attack of more than ordinary severity and was greatly reduced by it. She was taken to Mohkanshan in July, where she literally lived out of doors, and she returned in fine health and did not have another attack until January, 1904. One at this time was followed by recurring attacks until the summer, when she went to Mohkanshan; she had an attack just after arriving there. Returned in good health and had no attack for five months till December, 1905. She then had frequent and severe attacks and went to Mohkanshan in June. Early in July she fell down stairs on her head, and the injury was followed by an attack two days afterwards. She regained her health and strength and had no attack for seven months. On the 12th of March, 1906, she had a severe attack, and this was followed by one on the 25th of April that lasted for seven days. She was alarmingly prostrated, and it took her some time to regain her health and strength. On the 20th of May she went to the mountain cottage at Mohkanshan, where she again lived out of doors for five months. Returned to Shanghai in fine health and spirits and remained well until December 8th, when her breath was foul and tongue coated with white fur. Her food was at once reduced to one-third of the usual quantity and she was given $\frac{1}{4}$ grain of calomel, and repeat in twenty minutes, at bed time. December 9th, after an enema, she had a rather sour smelling stool of light color. She had some egg albumen and a very small bit of toast, a very small bit of toast and some water. Another enema produced no result. As she complained of pain in her stomach and slight head ache she was not allowed to eat anything at all for supper. She vomited watery mucus during the night, and in-
The China Medical Journal.

the morning. December 10th an enema of glycerine and water brought a little brown mucus. Nothing was given by the mouth, but enemata of pure water were given by the bowel every five hours and were retained. Temperature 98; slept a good deal. On December 11th, still vomiting, was given peptonized milk by the bowel four ounces every five hours; spells of vomiting came on every fifteen to thirty minutes. Had a good night, no vomiting from 6.30 p.m. to 5.00 a.m. December 12th vomited occasionally. Was much wasted and very nervous. Had a good night. No vomiting until 13th, but slept most of the time. December 14th was given a teaspoonful of Mellin's food, which came up. Rectal feeding continued. Slept during the night. December 15th no more vomiting. Began with a teaspoonful of malted food, increased to two teaspoonfuls every two hours. Enemata of water every four hours. Is nervous, excited and restless. Was given potass bromide enema, which quieted her and induced sleep. December 16th was convalescent.

This was a foreign child living in a new well-built house with every advantage of food and care. She had no suitable yard to play in, as the house was shut in by surrounding houses and the small yard was damp and gloomy. I have seen one case in a Chinese child of eight years very similar to the one just related.

Treatment: No food or even drink of any kind whatsoever should be given for the first twenty-four hours. Keep the child in bed and quiet in a darkened room. Give four oz. of water by the rectum, four or five times in the twenty-four hours. This relieves the thirst and keeps up the secretion of urine. After forty-eight hours small enemata of peptonized milk may be given three oz. or four every five hours. First wash out the bowel, wait for a short time, and then give the peptonized milk. In only a very few cases with intermittent pulse and extreme restlessness and insomnia will it be necessary to give hydrate of chloral and bromide of potassium dissolved in brandy and water by the rectum. Usually, however, the child is quiet and sleeps nearly all the time between the intervals of vomiting, which may come on every ten or fifteen minutes. After three or four days, if all vomiting has ceased for twelve or fourteen hours, one teaspoonful of malted food or of Horlick's milk may be given and repeated at intervals of one-half an hour if it is well bourne. Most people begin to feed too early, thus bringing on a fresh attack of the vomiting. Among the prodromata are nervous symptoms, head-ache, pains in the limbs, and especially copious bed-wetting at night. Among the symptoms of a coming attack are a coated tongue, the odor of acetone on the breath and dry, hard, sour-smelling stools, followed by constipation. Bromide of potassium given
regularly for three days will relieve the nervous symptoms. Repeated
doses of \(\frac{1}{10}\) grain calomel, followed by enemata, will relieve the constipa-
tion. At the same time give ten grains of sodium bicarbonate in
solution in the cup of milk taken at each meal. If these remedies are
used promptly as soon as there are any symptoms of an approaching
attack, it can often be averted. Our opportunity comes in the intervals
between attacks when we can use every possible means to build up the
child's constitution.

By referring to the case reported by me it will be seen that while
the child had good care as to food, clothing, fresh air in the bedroom
at night, systematic bathing, the avoidance of sugar and sweets and a
very careful limitation of the amount of starchy foods allowed, "she
had no suitable yard to play in, as the house was shut in by surrounding
houses and the small yard was damp and gloomy." The child did not
get sufficient exercise in the fresh air and sunlight. It was also noted
that whenever the child was sent to the hills at Mohkanshan there
was a marked improvement; no attacks coming on while there, and
that none occurred until after several months had been spent in the
town house with damp and gloomy surroundings. While at the hills
she simply lived out of doors in the free air and sunshine of summer
and autumn. Upon the return to town in cold, wet and gloomy
surroundings, the stock of health gained at the hills soon ran down, and
after a time the attacks began again. Time and again when the
symptoms of an approaching attack were noted, it was warded off by
the prompt use of bromides, of small doses of calomel to relieve
constipation and by giving sodium bicarbonate with the milk. Still
there would be times when the attack would recur. The most impor-
tant part of the treatment during the intervals is to let the patient lead
an active life in the open air and sunshine. Extreme fatigue and
exhaustion should be prevented. This life, together with great care
as regards diet and environment, will prevent recurrences which
will grow less and less frequent until they finally cease altogether.

Since writing the above I have seen a foreign child, under three years
of age, who has been under the care of a very skilful medical practitioner.
In her case attacks began before she was six months' old and recurred
frequently. They were very severe indeed and left the child in a very
exhausted condition. This child's parents are in good health and their
other children are well. The child lives in a good house, has a good
garden to play in and her food and regimen are well looked after. She
has the best of medical advice, yet the attacks continue to recur. My
investigations lead me to believe that this disease is more common than
it is generally supposed to be, and that it is not always recognized, but is sometimes mistaken for some other complaint. The ordinary textbooks make no mention of it, but any one who will hunt for reports of the disease in the medical journals devoted to children's diseases, will find that much attention is given to it and that efforts are being made to study the disease carefully and to find out the best methods of treatment for its relief.

It must be clearly understood that the disease of which I speak is one of infants and adolescents and that they often outgrow it entirely. It must by no means be confounded with any of the protean forms of dyspepsia in adults, nervous vomiting, hyperacidity, gastralgia and so on. The causes of these are pretty well understood and the proper treatment for them. The disease under consideration is attracting a good deal of study and attention, so that there is reason to believe that it will be better known and its causes discovered at no very distant date.

A STUDY OF THE ETIOLOGY AND DIAGNOSIS OF ENLARGED SPLEEN.

By Charles K. Roys, M.D., Weihsien.

In looking over a file of the China Medical Journal I found this extract from a report sent by Dr. Robert Coltman from Chinanfu in 1887: "Enlarged Spleen. This is the most unsatisfactory affection to treat that I have any knowledge of. Some of the patients have enormously enlarged spleens, pearly conjunctivae, pale flabby tongues, gradual loss of flesh and ultimate death... Will some of my brethren here in China kindly tell me if they have found a successful treatment?"

Being myself confronted, often several times a day, with similar cases of enlarged spleen, I looked eagerly through the file, hoping that someone had come forward and solved the problem. But the few who referred to it seemed as much in the dark as myself. Twenty years after Dr. Coltman's report, enlarged spleen still holds a large place in our hospital statistics in Central Shantung. Fifty-eight cases, or 14 per cent. of all patients seen by me in the last six months have had this trouble. In the women's dispensary 114 cases have been seen in the last two years by Dr. Margaret B. Bynon, to whom I am indebted for the records of these cases. This makes a total of 172 cases, upon which this study is based. I realize that conclusions based upon cases all seen in one district may have only local value, especially
I. DIED OF GENERAL TUBERCULOSIS.

II. TUBERCULOSIS, BOTH APICES AND LARYNX.
III. TUBERCULOSIS LEFT Apex.
   Old foul ulcer of scalp,
   probably syphilitic.

IV. ACUTE INFLAMMATION
    IN SPLEEN.
in this condition, where climatic and telluric influences are so important. Let us hope that the Association's Committee of Investigation may include this subject in its program, so that by funding our knowledge we may do more to relieve the wide-spread suffering and the immense loss of life for which this condition is responsible.

**Etiology.**

The average age of these cases was 14 years. Seventy-three per cent. of the cases were under 19 years of age and 30 per cent. under 6 years, as follows:—*

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<th>Age:</th>
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<td>1-5</td>
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**Sex.** Boys and girls seem about equally affected, although here more cases are seen proportionally in the men's work. Thirteen per cent. of patients under 18 years in the men's dispensary had this trouble and only 4.6 per cent. under 18 in the women's side. The reason for this is that children with minor troubles are taken by their mothers to the women's dispensary. The fathers, coming to the men's side, only bring those seriously ill. But, beyond doubt, cases are more common in men than in women. The figures here show 1.5 per cent. of all male patients over 18 and 1 per cent. of female. The figures showing cases grouped according to age will explain this. There is a rapid falling-off in the number of cases as the age increases. This is especially marked in the 16-20 group, which is the period when child-bearing begins and when boys begin heavy manual labor. More men survive this period than women do the beginning of child-bearing. In women only 20 per cent. of the cases were over 18, and 80 per cent. below that age. It should be mentioned here that almost without exception the cases are found on careful investigation to have begun in childhood.

The poor are more often affected than the rich. We have only found cases in well-to-do families when there was an evident tuberculous or syphilitic taint. While not desperately poor this region is over-populated to such an extent that the food of children of the poorer classes is limited to millet, sometimes a little wheat, eggs rarely, meat none, and rice a luxury which they never see. The proteid content of such a diet is plainly quite insufficient.

The time of year makes very little difference here. From the fourth to the tenth moon (May to October) malaria may be seen here

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* Fractions of per cent. not given. Ages are recorded in Chinese fashion, which averages one year greater than foreign style.
occasionally. In this time last year out of 1,050 patients in the women’s dispensary, 41 had large spleens. From the tenth to the fourth moon the non-malarial half of the year, out of 913 patients, 30 had large spleens. The percentage varies little.

Location. Cases come from city and country alike. In one branch dispensary among the hills twenty-five miles south of here 5 per cent. of all patients had enlarged spleen. In our other branch dispensary, thirty miles north-west, near the great marshes bordering the Gulf of Pechili, only 4 per cent. of patients had enlarged spleen.

Special Etiology.—The predisposing and the exciting causes, their comparative frequency and value, can best be studied by analysis of cases actually seen. By carefully putting together all available facts which bear upon this perplexing condition, we may in time arrive at its true causes, and so to logical methods of treatment. Mere empirical observation of the effects of treatment is too slow, uncertain, and antiquated a method for the investigation of this complex condition, except as it constitutes the final test by which all theories must be tried. These cases seem to fall into certain groups, not mutually exclusive, and calling for careful diagnosis.

DIAGNOSIS.

To recognize an enlarged spleen is usually a very simple matter. If we desire only to label the case “Enlarged Spleen,” it is easily done. The patient in the recumbent position, clothing well opened, abdominal muscles relaxed, balls of fingers of the examining hand impinging on the spleen from the right upward and to the left, will readily locate the distinctive anterior margin, which even when much enlarged still retains its serrations.

But if we wish to find out the actual condition of the unfortunate possessor of this “unearned increment” of splenic tissue, we confront quite a different problem, and one that has a number of possible solutions.

The general clinical picture of these cases was as follows: Average age, as stated, 14 years. Youngest, six months; oldest, 59 years. Onset of the disease, almost always in early childhood, although sometimes unnoticed for years. The course is steadily downward, and most children so affected fail to reach adult life, as shown by the age statistics given above. The two cases of death we have met with on the men’s side occurred one at 17 years (Fig. I) and one at 19 years, and both from tuberculosis. The subjective symptoms are a sense of weight and heat in the abdomen, sometimes dyspnœa,
epistaxis, or afternoon rise of temperature with sweating, but no chills. On examination there is found emaciation, anaemia, distended abdomen with dilated veins in epigastrium, and commonly fluid in young children. The heart's apex-beat is seen in the fourth or the third space, in the nipple line, pressed upward by the abdominal contents. There is often a hæmic murmur, loudest over the second left space. The spleen may be only a couple of inches below the costal margin, but usually reaches to the umbilicus, and often an inch, or two inches, to the right of the median line and well down to the crest of the pubis. The liver is often one to three inches below the rib-margin, but cases occur where only the lower right quadrant of the abdomen shows any tympanitic intestine.

The cases have been divided, according to predominating symptoms, into eight groups, as follows:

1. With characteristic symptoms of tuberculosis. Thirty-one cases, or 18 per cent. Average age, 16 years; youngest, 2 years; oldest, 47 years. There is slight emphasis on cough or expectoration, as children usually swallow sputum. The lungs show moist rales or prolonged expiratory sound at one or both apices, or sometimes only dullness and the dry click of a dormant process. The heart, abdomen, liver and spleen are as described above. The largest spleens were found in this group, and also, in long-standing cases, a peculiar "hour-glass" form of abdomen, due to continued distension of the upper segment by the large liver and spleen. (See Fig. V.)

2. With symptoms of rickets, malnutrition or scurvy. Twenty-eight cases, or 16 per cent. Average age, 4 to 5 years; youngest, six months; oldest, 11 years. There was a history of improper or insufficient food, constipation, sweating of the head, but rarely the pronounced bone symptoms seen in crowded cities at home. The life of the Chinese child, spent so largely in the open air, seems to prevent this development, however poor his food may be. But we often see the anterior fontanelle open till the second or third year, together with the rhachitic "rosary" on the chest, and that flaring outward of the lower ribs which produces "Harrison's groove" in the sides of the thorax. The abdomen is usually much distended, so that the edge of the spleen is hard to locate, and it often contains fluid, or there may be general dropsy. The liver and spleen are small in proportion to the distention. Cancrum oris is very common in these cases, as a terminal condition, ten of this group having this fearful end. Foul and bleeding gums and soreness of the mouth are often seen.
3. With symptoms of hereditary syphilis. Eight cases, or 5 per cent. Average age, 17 years; youngest, 3 years; oldest, 42 years. The history of the parents can sometimes be obtained, but the best indication is extensive scarring in childhood of the scalp, body or limbs, or at the angles of the mouth; sometimes peg-teeth may be seen. In older patients there is often a remarkable stunting of the growth. One case, 31 years of age, had the size and development of a boy of 10 or 12 years, a treble voice and no pubic hair.*

4. With history or symptoms of malaria. Five cases, or 3 per cent. Average age, 25 years; youngest, 15 years; oldest, 36 years. These had malaria as follows. A boy of 15 had it for three months, four years ago. A boy of 17 had it for some years past annually. A man of 29 had it for one month, nineteen years ago. A man of 36 had it for one month, ten years ago. A man of 32 has had it for three years past annually. This patient says that he is certain his spleen was not enlarged before these attacks of fever began.

5. With symptoms of ankylostomiasis. One case, 47 years of age. (Fig. VI.) This man came in for the removal of large internal hemorrhoids. He was found to be very anaemic and his spleen about four inches below the costal margin. He was kept on cod-liver oil and Blaud’s pills till his haemoglobin had risen to 70 per cent. After operation (clamp and cautery method) he had a severe hemorrhage from the rectum, and his haemoglobin dropped to 30 per cent. Then his stools were examined, the characteristic ova of uncinaria found, and he was given repeated doses of thymol. His haemoglobin is now 70 per cent. one month after operation.

6. With localized acute inflammation in a chronically enlarged spleen. One of these cases was a personal one, the other was kindly detailed to me by Mrs. R. M. Mateer, formerly Dr. Madge Dickson, in charge of the women’s medical work here. The first case (Fig. IV.) was a boy of 18, who had had enlarged spleen for years. For some years he had a cough with white expectoration. His lungs showed harsh and prolonged expiration at the left apex. His face showed a marked hectic flush; he was having an afternoon fever of 101° to 102° F. with profuse sweating. His left rectus was rigid over the spleen, which was enlarged past the median line and was very sore to the touch. His haemoglobin was 60 per cent. and his leucocytes were 17,200. After being under observation a few days he grew impatient.

*Manson (1) attributes this to malarial cachexia, but Emmett Holt (2) and others consider it as due to hereditary syphilis. The latter was certainly present in the case mentioned here.
V. STUNTED GROWTH.

VI. ANKYLOSTOMIASIS.
Black line shows spleen two months after treatment.
and left, since when nothing has been heard from him. The other case is pleasanter to report. It is that of a girl, 23 years of age, graduating this year from the high school at Weihsien. Her father is a native pastor, and the family are fairly well-off and intelligent, but several have enlarged glands, cough, and other evidences of tuberculosis. One brother had a very large spleen, diminished under treatment by German doctors in Tsingtau. At 10 years of age she began to have trouble with her spleen, which was already very large. For five years it grew steadily worse. She became very much emaciated and anaemic and had no periods. In 1900 an abscess formed just above the umbilicus, pointed, and discharged large amounts of pus for over a year. The size of the spleen was said to be much reduced. She was seen by Mrs. Mateer in 1901. A probe then passed six or eight inches into the region of the spleen. Sinus was packed and healed from the bottom. Iron and forced feeding were kept up, and the flesh and strength gradually returned. Later a hernia, the size of the fist, appeared. It was reduced, tightly strapped, and a truss applied. After some months the hernial opening closed. This girl was able to take a long, hard course of study, and to graduate this year seemingly in perfect health. Manson (3) explains these abscesses as due to broken-down haemorrhages in the splenic tissue.

7. Cases with many intestinal parasites. Six cases, or 4 per cent. Average age, 9 years; youngest, 2 years; oldest, 15 years. The chief complaint in these cases was the frequent passing of ascarides. Occasionally there was some abdominal pain, but no symptoms of toxæmia.

8. Undifferentiated cases. Ninety-three cases in all, where the data could not be obtained from the records, or from the patient, sufficiently for classification. The ignorance and unreliability of patients, and the lack of time for careful study of cases as they appear, make this class painfully large.

DIFFERENTIAL DIAGNOSIS.

Having tried to show what many of these cases are, let us see also what they are not. The mystery which surrounds this affection, in spite of our best efforts, is due to the large number of obscure conditions associated with enlarged spleen. If we can eliminate a few of these it will clarify the whole situation. To do this conclusively is more than any one observer can accomplish, even under most favorable conditions and certainly more than has been done by the study of these cases. We can only tell what we have not found and hope to hear from others on this whole subject.
First. No case gave symptoms, and only 3 per cent. gave any characteristic history of malaria. In no case was the malarial parasite found, out of a dozen suspicious cases examined, and the writer may claim a bowing acquaintance with the malarial parasite, having bowed long and often over interesting individuals of that species in the homeland. Of course most cases begin in childhood, when attacks might not be observed, or have been forgotten; and the malarial parasite is known to disappear from the finger-blood in many cases of cachexia. Yet this dearth of evidence of malaria, together with the comparatively non-malarial character of this region, and the remarkable frequency of enlarged spleen, seems significant.

Manson says of enlarged spleens: (4) “Wherever they are common the district is malarious and therefore unhealthy, perhaps to Europeans deadly, and should be looked upon as extremely unfavorable for residential purposes.” This is the accepted view. Yet foreigners have resided in this region for twenty-five years, and so far as known there have been only two cases of the disease, both of whom suffered from it before arriving in this region. No foreign children, born here, have had malaria. Again, the distribution of cases is not that of malaria. In the hills to the south of here a larger proportion of patients had enlarged spleen than in the marshy region to the north, from which come most of our cases of malaria. This may be accounted for by the fact that to the south the land is largely in millet, while to the north the land is richer and the people better fed. The fact that the condition is common among the poor, and rare among the rich and well-fed, unless with some tuberculous or syphilitic taint, is another argument for giving a large place to malnutrition as an exciting cause, whether it be from insufficient or unwise feeding in childhood, or due to intercurrent disease later in life.

Manson himself, at the close of his chapter on malarial cachexia, makes this significant statement: “Tubercular and syphilitic disease not unfrequently concur with malaria; in fact the latter may powerfully predispose to local manifestations of the two former, and vice versa a complication as to which the practitioner must be on his guard.” So it may be that malaria is to be considered as merely a possible predisposing cause in many of these cases, and our treatment adapted accordingly.

Second. None of the cases examined showed anaemia of the primary type, or symptoms of the idiopathic blood-diseases so often associated with enlarged spleen. The average of ten estimates of haemoglobin taken at random, where patients would stay long enough, was 50 per cent. by the Tallquist method. The red cells in these cases were fairly
uniform in size, shape and staining; only two cases showing poikilocytosis and one a few normoblasts. The average number of red cells would be about 2 1-2 to 3 million. The average leucocytosis was 13,000, but this included several cases with suppurating tuberculous foci, local inflammation in the spleen, and other causes for increase in leucocytes. The worst anaemia was found in those cases of long duration, with stunted growth, history or scars of syphilis, and sometimes also signs of tuberculosis. In one such case the haemoglobin was below 30 per cent., but the anaemia was of the severe secondary type. In most cases haemogenesis seems fairly well performed by the subsidiary organs even after the spleen is out of commission, as we know can be done after splenectomy. The breakdown comes after severe strains like pregnancy, or complicating conditions, in which the blood is used up faster than it can be supplied by the limited resources of the patient. It is to the discovery, prevention, or removal of these complications that a large part of our energies should be directed.

Third. Intestinal parasites, while very frequent in the dilated and atonic intestines of these cases, have little causal value. Ascarides of course are present in most cases, but give symptoms in few. No cases of toxæmia were observed. Ankylostomiasis was detected in one case, as recorded above. Repeated doses of thymol have made some improvement in this case. It certainly should be part of our routine treatment to detect and expel these unbidden guests, who doubtless add their share, whether small or large, to the burden of their long-suffering host.

Fourth. Splenic anæmia and primitive splenomegaly are non-committal terms which might be applied to these cases. As described by Osler, (5) however, this condition occurs chiefly in adult males, and is characterized by hæmorrhage from the stomach and bowels. Hæmorrhage occurred in only one case of this series, and could be easily traced to large internal hæmorrhoids.

Fifth. Kala-azar is another musical name associated with enlarged spleen. This may be a typical cachexia, cause unknown, or it may be an infection with the Leishman-Donovan bodies through the bed-bug as an intermediate host, as suggested by Rogers (6). The Leishman body was found in a case in Tsingtan (a Chinese) in June, 1907, by Prof. Mattini, of the German Government Medical Staff, and Dr. Dipper, of the Faber Krankenhaus. I am indebted to the latter for information about this case and also for access to Leishman's own article upon this subject (7). This latter, with its beautiful color drawings of the parasite, should be seen by all who wish to understand this interesting
As I do not know that it has appeared in English, a brief abstract is inserted here.

**Synonyms**
given are dum-dum fever, tropical splenomegaly, cachetic fever, non-malarial remittent, etc.

**Etiology.**—Cause thought to be a parasite belonging to the flagellae, not a trypanosome, called by Laveran the “Piroplasma donovoni,” by others the Leishman-Donovan body. Its life-cycle is not fully known. (Rogers' bug-theory is a later development. R.) No racial immunity. By no means rare in English soldiers in India. Many deaths thought to be due to dysentery, etc., are probably due to this cause. The disease increases in frequency during the rainy season, and deaths are common at the end of the rains.

**Distribution of the parasite.**—Assam, Ceylon, Madras, the Soudan, German East Africa, the Philippines, Central China, Shantung. R.)

**Pathology.**—Spleen, liver, mesenteric glands, bone-marrow, etc., show the parasite. Sections of liver and spleen show “endothelial macrophagi,” large cells full of the parasite. Yellow marrow of long bones changed to red. Parasite found in large mono-nuclear cells. Leucocytes at first increased, later a distinct leucopenia, especially of the polymorphonuclears. (German observers believe the disease to be a “malaria of the white blood cells.” Parasites are frequently found in the white cells, rarely in the red. R.)

**Symptoms.**—Incubation, three weeks to one month. “Undulant type” of fever; at first, 103°-104° F. remittent or intermittent, with periods of low temperature; later, 101°-102° F. In cachetic stage, sometimes below normal for days. Spleen often enlarged past the median line and to the pubes. Liver moderately enlarged. Transient oedema of legs common. Ascites, or fluid in pleura or pericardium not uncommon late in the disease. Dysentery and diarrhoea common terminations.

**Blood-examination.**—At first, leucocytosis (with high temperature). Later a marked leucopenia, especially of the polymorphonuclears. The count may be 1,000-2,000, or in severe cases 700-800. Polynuclears may be only 62 per cb. mm. Parasite, found best by splenic puncture, has two chromophilic bodies: one small and one large. Few in red cells, numerous in white.

**Prognosis.**—Bad if leucocytes are below 2,000. If they increase prognosis is good.

**Treatment.**—Quinine of little value. Arsenic, iron, nux vomica no better result. Good nursing and good nourishment are most important.

**Differential diagnosis.**—A decisive factor in suspected cases should be the leucocyte count. Dr. Dipper's case showed 2,000 per cb. mm. If after months or years of the disease the count is normal or excessive, the presumption is strongly against Kala-azar. If there is leucopenia the finger-blood should be searched, and in selected cases the spleen punctured, or better perhaps the liver, as a less dangerous procedure.

None of the ten counts made here showed a leucopenia; the average being above rather than below normal. There is nothing of an epidemic nature about the cases seen here, or of that devastating progress seen in Assam, where “the disease passes over the country like a serpiginous ulcer, advancing, so to speak, at one edge and healing at the other” (Manson). The peculiar undulant type of fever, as seen in Malta fever,
A Study of the Etiology and Diagnosis of Enlarged Spleen.

has not been observed here. Still, as the parasite is known to exist here, a certain proportion of enlarged spleens may be due to this infection. What that proportion is, remains to be found out. It is hoped that numerous observers in many parts of the country will attack this problem, and that this article may at least suggest lines for such investigation.

CONCLUSIONS.

1. No one disease, and certainly not malaria, can be assumed as the only cause of enlarged spleen in this region.
2. Every case should be judged by itself and the actual condition of each patient understood if possible, bearing in mind the probable causes in order of frequency.
3. Whatever the primary cause or causes, the resulting cachexia tends to prolong and aggravate itself by the establishment of a "vicious circle," wherein the malnutrition of the patient keeps up the congestion of the spleen (as commonly seen in rickets), and the congested and ultimately hypertrophied spleen, clogging the portal circulation, prevents the proper nutrition of the patient.

TREATMENT.

A full discussion of treatment is outside the scope of this article. This much may be said, however. If the above last mentioned conclusion is true, then the best way to break up the "vicious circle" seems to be nourishing the patient. The treatment of malnutrition is food, not quinine, arsenic, or tonics, which are not food, but cod-liver oil, iron, and plenty of good, digestible proteids, which the ordinary diet of patients so largely lacks. The pure tonics should not be our main reliance. Leishman(8) emphasizes the great importance of nursing and good feeding in cases of kala-azar, and we have found it equally evident here for all forms of enlarged spleen from whatever cause. This plan of treatment has been tried here on comparatively few cases so far, but has shown some interesting results. The girl who recovered after abscess of the spleen, was treated in this way with iron and forced feeding. The two cases whose photographs (Fig. V. and Fig. VI.) show reduced size of spleen, took cod-liver oil, Blaud's pill, and four to six eggs a day, usually eaten raw, with all the other food they could digest.

It is impossible to keep track of the great majority of these cases, and few of them, when alone, have the patience to continue treatment for the weeks or months necessary to secure results. But if we have clear in our own minds some method of procedure we may succeed in convincing the patient or his parents of its value, and much may be done to help these thousands of sufferers to an easier life and to prevent the complications which so frequently carry them off.

I have to thank a number of my colleagues in Shantung and Chihli for replies to a personal letter upon this subject, sent out May 5, 1907.
Dr. C. F. Ensign, of Taianfu, reports about forty cases in the last two years, nearly all under eighteen years, most of malarial origin, a few with rickets, and all with intestinal parasites. His treatment, after expelling parasites, is iron and quinine. He says: "I now think better results come from an increase of iron with less quinine." Dr. Elma E. Fleming, of Ichowfu, says that most of her cases are in children, and seem to be of malarial origin. She calls attention to the frequency of noma in this condition and to its fatal character in these cases. Dr. C. H. Lyon, of Tsiningchow, says that the average age of his cases is about ten years. They are of malarial origin; a few have symptoms of rickets. He has used quinine, arsenic, iron and cod-liver oil. The two former are not well-borne in advanced cases. The latter have seemed to help some cases. He advises patients, where possible, to go to the mountains for at least six months. Dr. J. H. Ingram, of Tungchow, Chihli, reports a case cured by cod-liver oil. He says: "My own opinion is that the cause is malnutrition. Malaria seems only an aid in developing the anaemia and not the primary cause." Dr. Thos. C. Paterson, of Ts'ouping, has found these cases extremely resistant to treatment. "Occasionally arsenic (itself, or combined with iodide of mercury) produces surprising effects." Mrs. R. M. Mateer, M.D., of Weihsien, reports two cases cured: one with iron and forced feeding (referred to above) and another with iron and cod-liver oil. Dr. F. F. Tucker, of P'angchuang, reports about seventy cases in the last two years; average age ten years, and a majority of malarial origin. Quinine and iron have a favorable effect in about one case in ten.

REFERENCES:
(1) Manson. Tropical Diseases, p. 112.
(3) Manson. Tropical Diseases, p. 116.
(4) Ibid., p. 116.
(7) Mense. Handbuch der Tropenkrankheiten, B. III, "Kala-azar." (Barth, Leipzig, 1906.)
(8) Ibid. Leishman, "Kala-azar."

Rhein's Specific Remedy for Diarrhoea and Dysentery.—"The following is the formula of a preparation of simaruba much used in Shanghai, and there known as 'Rhein's Specific Remedy for Diarrhoea and Dysentery.' I understand that the formula was purchased by the Shanghai municipality for a considerable sum of money, so highly was it thought of by the European community of that city. Simaruba bark, three ounces; Chinese cinnamon, one ounce; boil in three quarts of water and allow it to evaporate down to one pint. When cool, strain into a brandy bottle, add three tablespoonfuls of good brandy, and fill up by pouring cold water over the bark in the strainer till the bottle is full. Dose: A wineglassful three times a day."—Tropical Diseases, Manson, Fourth edition, p. 454.
NOTES ON THE URINE OF TUBERCULOUS AND NON-
TUBERCULOUS INDIVIDUALS IN SOUTH CHINA.

By G. DUNCAN WHYTE, M.B. (Edin.), Swatow.

What disheartens one most in any endeavour to carry out research is the tremendous amount of negative work that must be done before any positive result is obtained.

How many blood films one has examined in obscure cases, searching for some alteration in number, proportion or structure of red or white cells which would help in nosology! Sometimes one sees a Will o' the Wisp and follows it half a night only to find that it is an ignis fatuus, and not a true pathological entity.

The following is submitted to the readers of the CHINA MEDICAL JOURNAL, in the hope that the publication of some negative results may save others from repeating similar analyses and thus free them for work that gives more promise of being fruitful.

One was led to make the examinations that are referred to below by a desire to facilitate the differentiation of the secondary anaemia of phthisis from other conditions associated with impoverishment of the blood; a fairly reliable test was required by which one could diagnose cases where there was no sputum and the physical signs were still indefinite. One authority writes: "The loss of phosphates by the urine takes place in quite the early stages of phthisis, and is also very considerable. It may indeed be regarded as a differential test as between pseudo-chlorosis attending tuberculosis and genuine chlorosis, in which malady the urinary phosphates are actually diminished."

The statistics to be adduced may be divided under three headings, viz., those relating to (a) weight of phosphates, expressed as phosphoric anhydride (p. 205) per hundred cubic centimetres of urine, (b) weight of phosphoric anhydride in one hundred parts urinary salts, (c) total weight of phosphoric anhydride excreted daily.

FACTS RELATING TO THE WEIGHT OF PHOSPHORIC ANHYDRIDE CONTAINED IN 100 CCMs. URINE.

In the routine examination of dispensary cases it was found that in seven cases with tubercle bacilli in their sputum the average percentage of phosphates in the urine was .184, and only one of those cases had less than .16 per cent. On the other hand, out of twenty-four cases that

* Cornet in Nothnagel's Encyclopedia of Practical Medicine, article Tuberculosis, says: "The loss of flesh is accompanied by phosphaturia, as shown by Beneke, de Renzianh Senator. According to Teissier the phosphaturia vanishes with the advent of the period of cachexia. Stokvis attributes no diagnostic importance to this symptom."
The China Medical Journal.

were not tuberculous the average excretion was .106 per cent., and only two of these cases had as much as .16 per cent. These facts were suggestive, so further investigations were proceeded with, and eighteen more cases in the tuberculous class were found to give an average of .154 per cent., while twenty-one more non-tuberculous cases only gave .104 per cent.

(B.) FACTS RELATING TO THE PERCENTAGE OF PHOSPHORIC ANHYDRIDE IN THE URINARY SALTS.

In criticism of the above facts one would suggest that the percentage of phosphates will depend (apart from considerations of diet) on the concentration of the urine, and will, therefore, ceteris paribus, be increased in fever, diarrhoea, or other conditions that concentrate the urine by removing fluids from the body. One would enquire whether, in urines of equal concentration, that from a phthisical patient shows a greater percentage of phosphates than that from a non-phthisical patient.

One method of getting an answer to this question is to find the total weight of solids, in grammes, in one thousand cubic centimetres of urine and the weight of phosphates in a similar bulk of urine, and then work out what percentage of the solids the phosphates form.

Considering the amount of trouble required to obtain these figures the fact that their value is purely negative is most disappointing. An analysis of forty-six cases showed that in the phthisical ones the phosphates varied from 1.6 per cent. to 5.58 per cent. of the total solids, and averaged 3.99 per cent., while with the non-phthisical cases the average was 4.51 per cent., the extremes being 2.14 per cent. and 8.2 per cent.

The same point—the relation of phosphate excretion to concentration of urine—may be investigated by finding the percentage of phosphates in different urines of the same specific gravity. Thus in a series of urines, ranging in specific gravity from 1016 to 1020 there was found to be an average of .16 gms. of phosphoric and anhydride (per 100 c. cms.) in the phthisical cases, as against .17 in the non-phthisical ones. A similar series of urines of sp. gr. between 1010 and 1015 showed: phthisical cases .09 gms. and non-phthisical .1 gm.

We may therefore take it as being clearly proved that the percentage of phosphoric anhydride in the urine in cases of phthisis does not differ appreciably from that percentage in urines of equal specific gravity, obtained from healthy people or patients suffering from non-tuberculous diseases.
(C.) FACTS RELATING TO THE TOTAL WEIGHT OF PHOSPHORIC ANHYDRIDE EXCRETED DAILY.

The question of the total daily phosphatic excretion had still to be considered, and for that purpose analysis of the whole of the urine passed in twenty-four hours was required.

To form a suitable basis for comparison, analyses were made of the urine of twelve healthy lads (hospital students and hospital and domestic servants). The urine of the whole twenty-four hours was collected in clean wide-mouthed glass bottles and examined before decomposition had set in. Having collected the urine it seemed a pity to make no further use of it than to estimate the phosphates, and so the specific gravity, chlorides, sulphates, and urea were also estimated. I regret that in this series of examinations no attention was paid to Uric acid and the Purin bodies generally.

The following table gives the average of the twelve healthy cases, with the maximum and minimum amount of each constituent that was found in the course of the analyses.

Lest twelve healthy lads should seem too limited a number of cases to form a suitable basis for comparison I have inserted the average of the analyses of ten patients suffering from conditions other than tuberculous diseases, nephritis, or cardiac affections with oedema.

The table also gives the "book average," that is, the figure given in the text-books as being approximate for a healthy individual at home; also the figures for one case which I did not feel justified in including along with the twelve cases owing to the wide divergence this lad's urine showed from all the others.*

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>1300</td>
<td>1006</td>
<td>.845</td>
<td>8.2</td>
<td>8.</td>
<td>28</td>
</tr>
<tr>
<td>A'ge of 12</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>healthy lads.</td>
<td>1780</td>
<td>1014</td>
<td>2.007</td>
<td>12.63</td>
<td>13.76</td>
<td>53-57</td>
</tr>
<tr>
<td>Maximum</td>
<td>2500</td>
<td>1018</td>
<td>2.88</td>
<td>19.8</td>
<td>19.8</td>
<td>63</td>
</tr>
<tr>
<td>A'ge of 10 non-tuberc. cases.</td>
<td>2100</td>
<td>1009</td>
<td>1.79</td>
<td>14.24</td>
<td>12.11</td>
<td>47.58</td>
</tr>
<tr>
<td>Book a'ge</td>
<td>1450</td>
<td>1015-1025</td>
<td>2.3</td>
<td>12</td>
<td>25-40</td>
<td>60-70</td>
</tr>
<tr>
<td>Extra case</td>
<td>1500</td>
<td>1026</td>
<td>3.75</td>
<td>25.5</td>
<td>31</td>
<td>91</td>
</tr>
</tbody>
</table>

Note.—The increased bulk of the patients' urine, compared with the students', may be due to the diminished amount of exercise they were able to take, and consequent diminished loss of fluid through the skin. The absence of active exercise, and consequent diminution of katabolic metabolism would (in conjunction with the poverty of their diet) explain the smaller amount of urinary salts.

* The only explanation of these figures I can submit is that the lad—with the healthy appetite of a hard-working boatman—availed himself unduly of the facilities which his brother's generosity provided for over-eating himself with unusual foods on the occasion of his first visit to the Fu city.
The next table shows the average urinary content of six tuberculous cases. Unfortunately several cases of phthisis have had to be excluded from this series, because they were undergoing dietary treatment, which had a marked effect on their urinary excretion. The analysis from one of these cases—typical of others—is added to the table to illustrate the effect of a diet of milk, eggs, and raw meat on the amount of urea in the urine (which one may doubtless regard as having some relation to the amount of urea circulating in the blood).

The temperature charts of these six cases lie before me now. In one of them the temperature only once exceeded 99° and rarely fell below 97°.5; three others ran between 98° and 103°, while the other two never came below 99° and sometimes exceeded 104°.

<table>
<thead>
<tr>
<th>Amt.</th>
<th>S. G.</th>
<th>P O</th>
<th>Cl.</th>
<th>Urea</th>
<th>Total solids</th>
</tr>
</thead>
<tbody>
<tr>
<td>ccms.</td>
<td>gms.</td>
<td>gms.</td>
<td>gms.</td>
<td>gms.</td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>300</td>
<td>1012</td>
<td>.75</td>
<td>5.0</td>
<td>6.5</td>
</tr>
<tr>
<td>Average</td>
<td>733</td>
<td>1017</td>
<td>1.20</td>
<td>7.55</td>
<td>9.61</td>
</tr>
<tr>
<td>Maximum</td>
<td>1300</td>
<td>1022</td>
<td>1.615</td>
<td>11.7</td>
<td>12.8</td>
</tr>
<tr>
<td>Case under zomotherapy</td>
<td>900</td>
<td>1032</td>
<td>3.06</td>
<td>7.2</td>
<td>25.2</td>
</tr>
</tbody>
</table>

These figures may be taken to prove that the daily excretion of phosphates in cases of advanced phthisis is as a rule less than that of a healthy individual.

SUMMARY OF CONCLUSIONS INDICATED BY THE FOREGOING FIGURES.

(A). In the cold season of the year the urinary excretion of a native of South China is somewhat larger in amount than that of an "average man" at home, but, as the specific gravity is distinctly lower,* this increase in volume is not accompanied by any increase in solid matter. On the contrary though the amount of phosphates and of chlorides approximate to the home figures, the amount of urea comes short of that standard by about one-half.

(B). Patients suffering from advanced phthisis exhibit a urine which is diminished in bulk, and (despite an increase of density) in the total daily amounts of phosphate, chlorides, urea, and the urinary salts generally.

(C). There seems reason to believe that this concentration of the urine is present in fairly early stages of the disease so that an increased specific gravity of the urine may suggest phthisis to the physician, even

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* Through the kindness of Dr. Layng, Swatow, I am permitted to publish the following results of estimations of the specific gravity in 392 different cases. Of these over a hundred were dispensary shop assistants, domestic servants, gig-men, etc. The remainder were mostly applicants for life insurance, some of whom, knowing that a low specific gravity was not desired, took means to raise the Sp. Gr. by abstaining from much tea drinking, etc. In the whole of the dispensary assistant class the Sp. Gr. was below 1020, and in 69 per cent, it was below 1015. In the "candidates for insurance" class it was below 1015 in 54 per cent, and above 1025 in only 1 per cent.
A CASE OF YAWS.
though the patient is unaware of the existence of fever or night-sweats. An estimation of the phosphates will yield no more valuable information than that yielded by the urinometer.

(D). The diminished excretion of urea—which one would naturally expect from a consideration of their ordinary dietary—is important, particularly in view of the extent to which the Chinese fall victims to the tubercle bacillus and of the beneficial effects of pure urea and a highly nitrogenous diet even in cases of advanced phthisis.

In carrying out these investigations I received considerable help from one of my students—Kuan Hsien-t'ing—whose manual dexterity and mental alertness lightened the labour and increased the interest of these and many other investigations. Our labours will not be wasted if these notes are a help to those working on similar lines, a stimulus to others to investigate kindred problems.

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**A CASE OF YAWS.**


The old controversy of the relation of yaws to syphilis may not be yet at an end, but the views of those who hold that they are distinct diseases, possibly caused by a similar parasite, are strengthened by the occurrence of cases similar to the one related below.

In July, 1906, the father of the patient returned from Singapore with an attack of yaws in full swing. It had developed shortly before his leaving for China. He was very careless and the towel which he used after washing his body was also used for wiping his boy's face and neck.

In November, 1906, the boy, a lad of eight years of age, began to suffer from malaise, and a pustule appeared, according to his grandmother's description, above the right temple. His condition grew worse, and in the early part of January, 1907, he was brought to the hospital, but nothing was said about the history of the case. There was a raised ulcerated patch at that date on the right temporal region, and over the forehead and arms were shotty papules which made one suspicious of an atypical attack of small-pox. He did not return to hospital for two months and then presented the typical appearance of a case of yaws. In fact it was so typical that a mere glance at the patient was sufficient for diagnostic purposes. Under treatment with Hyd. c. Creta the case improved, but he was only brought at rare intervals for more medicine, and on September 19th, 1907, there were still a few spots which retained the usual characteristics on arms and legs.
The photograph, which was most difficult to obtain, owing to the fears of the grandmother, shows the appearance of the upper half of the body in March, 1907.

**CASE OF LIGATURE OF COMMON FEMORAL ARTERY AND VEIN.**

By R. T. Booth, M.B., B.Ch., Hankow.

The patient came with granulomatous condition of penis, a mass of enlarged glands in right groin, and an ulcerated cavity in left groin where the gland had completely disappeared, leaving a cupshaped depression.

Complete amputation of penis and double castration with enucleation of glands in right groin was effected, and then before removing the patient from the table the cavity in the left groin was lightly scraped. It was found, however, that the ulceration had affected the vessels, and a tremendous flow of blood from the femoral vein resulted. This was stopped with some difficulty, owing to the manner in which the "welling" blood obscured the exact seat of the hemorrhage. Forceps were left on and the patient put back to bed. After forty-eight hours the forceps were carefully removed, and no further hemorrhage took place. It was noticed, however, that the wall of the artery showed a tendency to bulge in one spot which was bluish and thinner than the rest. Graduated pressure was applied, and for forty-eight hours all went well. One day, fortunately when I was at hand, the nurse noticed hemorrhage through the dressings, and I quickly cut away the bandages and put several forceps on the bleeding patient. At the time I discussed with myself, unfortunately having no one else to consult, the advisability of immediately ligaturing the femoral artery, but decided to wait, for the following reasons: 1. The patient was weak from loss of blood. 2. Septic condition of parts. 3. I knew I had not completely occluded the femoral artery with the forceps, merely diminishing by one-half at least the flow of blood through the vessel. This being so I felt that the longer I delayed the ligature the better chance there would be of the collateral circulation being established. The blood via the femoral being diminished by at least one-half, the collateral vessels would dilate to allow the other half of the blood to pass through them.

Under the circumstances I postponed operation for forty-eight hours, and then, putting patient under chloroform again, I removed the forceps.
An Inexpensive Warm Stage for the Microscope.

and proceeded to ligate. With the assistance of Dr. Cundall, who arrived that day in Hankow on his way to Tehugan, I succeeded in putting ligatures on both artery and vein. It was exceedingly difficult, owing to the matted condition of the parts, to find the vessels above where they had ulcerated, and owing to the septic condition I was afraid to attempt ligature of the iliac vessels for fear of affecting the peritoneum. After some careful dissecting, Poupart's ligament was displayed and retracted upward, and ligatures were then placed on both artery and vein. In order to avoid any further trouble from hemorrhages due to a return flow from below, in the artery, the femoral sheath was opened below and the artery again ligated. The femoral vein as it lay beside the artery was of course also ligated.

After dressings were applied the patient was put back to bed; the leg being bound in cotton wool, and hot water bottles being placed around to preserve the warmth of the limb. Needless to say I anxiously awaited the re-establishment of the circulation in the limb. No oedema, no sign of deficient circulation as shown by color or coldness, appeared, and the patient has gone on steadily improving. He is still in the hospital, and the ulcerated place is slowly and steadily healing.

The absence of oedema, after ligature of femoral vein, and the absence of coldness and cyanosis, after ligature of femoral artery, I attribute to the facts mentioned above. During the time when the forceps partially occluded both artery and vein, the collaterals had opportunity to dilate, so that when on ligature of the main vessel the entire supply of blood was cut off, they were able to convey sufficient arterial blood to keep the limb healthy and give passage to sufficient venous blood to prevent swelling and oedema.

AN INEXPENSIVE WARM STAGE FOR THE MICROSCOPE

By O. T. Logan, M.D., Changteh.

The accompanying drawing will, I think, show a very satisfactory warm stage that will appeal to those who possess microscopes, either without mechanical stages or with mechanical stages of the superimposed type, such as the one in use by the writer (Bausch and Lomb, BB8.).

Having had much trouble in using the classical fenestrated metal strip, owing to the difficulty in shifting from one field to another, it occurred to me one day to utilize a piece of broken plate glass that was lying handy, after warming it, instead of the metal strip. The
experiment was satisfactory, but I found that the plate glass soon cooled off and a good deal of time was lost in heating it again. It finally occurred to me to combine the two—the plate glass and the metal strip—and I found that by using a piece of plate glass about the size of the largest slide that can be accommodated by my mechanical stage, the result was all that could be desired.

The method is as follows: The plate glass, which should be about one-fourth of an inch thick, is placed on the microscope stage, and upon this is placed in turn the fenestrated metal strip and the slide containing the specimen. The metal strip and slide are bound firmly onto the plate glass, which gives a steady anchorage.

If it is desired to use this sort of a warm stage on microscopes that do not have mechanical stages it is only necessary to remove the two clips from the top of the stage and proceed as above, with this difference: the piece of plate glass should be nearly as large as the microscope stage, so that the anchorage of the metal strip may be as firm as possible, thus avoiding vibration when changing fields.

It is hardly necessary to say that some sort of a warm stage is absolutely necessary when examining for amoebæ, and it is hoped that this description will make that work easier and more satisfactory for others who are engaged in work similar to that of the writer.

This description is offered for simultaneous publication in The China Medical Journal and The Journal of Tropical Medicine and Hygiène.
NOTES SUR UN CAS D’ANEVRYSME DIFFUS DE LA RADIALE.

Par le Dr. Abbatucci.

Le Né Hiang-by-tchang sujet Chinois venant de Kin-tcheou se présente à la consultation le 11 Novembre 1905, porteur d’une volumineuse tumeur de l’avant-bras droit, dont il nous prie de le débarrasser. C’est un homme de quarante ans, de constitution moyenne, mais aux traits emacis par l’abus de l’opium.

D’après ses renseignements, l’affection date de trois ans. C’était au début une petite tuméfaction insignifiante, du volume d’une noisette à peine, apparue un jour brusquement sans cause appreciable, sans traumatisme de la région. À la suite d’un vigoureux massage pratiqué par un rebouteur Chinois la poche éclata soudain et depuis lors, progressivement, l’avant bras augmenta de volume.

Les dimensions actuelles de la tumeur sont considérables et peuvent être comparées à celles d’une tête de nouveau-né. Toutefois, elle n’est point sphérique, mais plutôt ovoidale à grand axe longitudinal commençant à un travers de doigt du pli du coude, pour se terminer à 6 centim du poignet. Elle paraît occuper toute la loge antéro-externe de l’avant-bras, empiétant néanmoins davantage sur le côté radical du membre. À son point culminant, on constate une ulceration cutanée circulaire du diamètre d’une pièce de 5 francs. Sa consistance est nettement rémittente. Son auscultation ne révèle rien de particulier, mais en appuyant convenablement le sthétoscope sur l’humérale ou la carotide droite ou même par une compression digitale modérée de ces artères, on entend ou on perçoit une sorte de bruissement, de thrill vibratoire. Le pouls radial est impossible à découvrir, la cubitale à peine perceptible. Les mouvements de flexion et d’extension du poignet et des doigts sont à peu près conservés; le mouvement de pronation et de supination du membre sont abolis.

L’âge de la tumeur, l’absence de fièvre, etc., permettent d’éliminer tout de suite l’idée d’une collection purulente. On pourrait songer à un hématome, mais il n’existe point de traumatisme initial. La petite collection limitée du début était donc sans doute un anévrysme de la radiale qui sous l’influence de malaxations violentes et intempestives s’est brusquement transformé en anévrysme diffus.
Quelle était, en pareil cas, la conduite à observer? La meilleure méthode et la plus certaine était évidemment d'aller à la recherche des deux bouts de l'artère brisée et d'en opérer la ligature après avoir débarrassé la poche de son contenu. Mais étant donnés la vieillesse des accidents, le volume et la distension de la tumeur, la présence d'une ulcération cutanée étendue, les désordres intérieurs devaient être déjà considérables. Aussi pareille intervention nous apparaissait comme irréalisable et en désespoir de cause, nous proposâmes au malade l'amputation du bras. Mais ici on se heurtait aux convictions bien arrêtées du patient qui, comme tous les Chinois ses compatriotes, tenait absolument à se présenter au complet le jour de sa mort devant l'esprit ancestral et qui opposa à notre proposition le refus le plus formel.

Il fallait agir cependant; le temps pressait, une breche cutanée était imminente et avec elle l'hémorragie foudroyante et mortelle. Nous songeâmes alors à instituer un traitement purement païllatif: la ligature de l'humerale au pli du coude qui fut acceptée.

L'artère fut donc découverte et liée le plus bas possible en respectant une grosse collatérale qui se présenta sous le bistouri (20 Novembre). Les suites opératoires furent excellentes. Le malade accusa simplement un peu d'engourdissement de l'avant-bras. La tumeur parut s'affaîsser; sa consistance devint mollasse et ou pouvait même lui imprimer des mouvements d'oscillation ce que ne permettait point autrefois sa distension. Mais à cela se borna l'amélioration; l'ulcération cutanée gagnait toujours et la menace hémorragique se posait de nouveau dans un délai plus ou moins éloigné.

Dans ces conditions nous nous résolûmes enfin à offrir au malade de tenter une intervention directe sur la poche sous condition formelle de nous autoriser à amputer, en cas d'insuccès. Après une lutte acharnée, le patient se rendit à nos objurgations.

L'opération fut pratiquée le 11 Décembre après anesthésie cocaïnée et application de la bande d'Esmarch: Grande incision de 12 centim., suivant la ligne d'opération pour la ligature de la radiale, allant jusqu'à l'aponévrose. La peau se détache facilement de cette dernière sous la simple pression des doigts. Pour nous donner plus de jour, nous détachons par une deuxième incision courte contournant l'ulcération un grand lambeau cutané. L'aponévrose est à son tour sectionnée sur une soudure cannelée et la poche anévrysmale se montre aussitôt sous nos yeux. Nous y plongeons le doigt qui s'y enfonçe comme dans la gelée de groseille et ramène des caillots ocreux et de débris musculaires. Par expression et au moyen de lavages nous la vidons de toute cette purée musculaire et sanguine. Notre doigt allant en exploration retire de
nombreux débris osseux. Le radius est fracturé sur une longueur de douze centim. environ ; nous en extrayons des séquestres sur lesquels on remarque encore l'expansion fibreuse des insertions musculaires. Les muscles de la région externe (radiaux-supinateur), et les muscles superficiels de la région antérieure (rond pronateur grand palmain—petit palmain) n'existent plus et nous essayons sans succès de reconnaître au milieu de ce putrilage le médian et l'artère radiale.

Il était évidemment impossible de conserver un membre atteint de pareils dégâts et nous avertîmes le malade qu'il devait se résigner à l'amputation du bras. Celle-ci fut pratiquée, séance tenante, au tiers inférieur, pour la méthode circulaire, après anesthésie cocainée. Elle fut supportée sans grande douleur et une dizaine de jours après, le malade pouvait de nouveau vaguér à ses opérations habituelles après avoir présente des suites opératoires très benignes et apyrétiques.

Suivant le désir de l'opéré le segment du membre amputé, lui fut remis et un sien ami l'enterru soigneusement dans une minuscule fosse d'où il sera exhumé plus tard lorsque le réclamera le squelette possesseur, navré de sa mutilation anticipée.

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RAPPORT SUR LA SITUATION SANITAIRE DE PAKHOI
POUR LA PÉRIODE S'ÉCOULANT DU 1ER MARS AU
30 SEPTEMBRE 1907.
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Par le Dr. R. ASCONET.

Arrivé pour la première fois à Pakhoi le 22 Février et agréé comme Médecin des Douanes impériales Chinoises à dater du 1er Mars, je n'aurai que fort peu de choses a dire sur l'état de la santé publique à Pakhoi pendant les 7 mois qui viennent de s'écouler.

Mes prédécesseurs ayant très certainement traité la question climatologique et nosologique de ce pays, il me restera simplement à dire quelques mots des deux épidémies, choléra et peste, qui ont sévi cette année à Pakhoi et dans les environs immédiats.

Les pluies ayant en partie manqué cette année on pouvait s'attendre à une reviviscence des anciens germes morbides, cholériques, pesteux, dysentériques, au moment des fortes chaleurs. C'est du reste ce qui n'a pas manqué. Les forte pluies, plus parait-il les années précédentes, se chargeaient de nettoyer la ville et d'entrainer à la mer les détritus innomables qui souillent les ruelles et les carrefours, ont complètement fait défaut, aussi le choléra faisait-il son apparition à Lien-cheou dans
la deuxième quinzaine de Mai. Cette épidémie, qui semble-t-il a été assez meurtrière, n'a pris fin que vers le 15 Septembre.

Dans les premiers jours de Juin on constate des cas de choléra à Ngai-sa, village situé dans la banlieue de Pakhoi. Ce village est habité par une population que l'on peut estimer à environ 1500 habitants; au début l'épidémie a sévi avec intensité, 6 décès en moyenne par jour, pour aller ensuite décroissant.

Enfin vers la fin Juin on note des cas de choléra à Pakhoi même. On compte 6 décès par jour en moyenne pour le choléra, dans une population estimée à environ 30,000 habitants. Cette épidémie diminue dans la deuxième quinzaine de Juillet, où il n'y a plus que 4 a 5 décès par jour. Chose bizarre cette diminution de gravité de l'épidémie coincide avec une recrudescence d'affections gastro-intestinales, diarrhées et dysenterie qui sévissaient déjà depuis trois mois environ. Les cas de choléra étaient très sévères, puisque les malades atteints mouraient en 4 et 5 heures. Les enfants ont été indemnes, l'épidémie se localisant chez les grandes personnes et plus particulièrement chez les femmes. Certains hommes atteints ont guéri spontanément, et on ne cite pas de cas de femme atteinte ayant échappé à la mort.

L'épidémie a sévi surtout chez les gens de vie sédentaire, boutiquiers et artisans; la classe si nombreuse des coolies ou des travailleurs au grand air a été peu atteinte. En tout le choléra dure toujours, c'est surtout la population des jonques qui est décimée. L'épidémie s'étend, la plupart des villages voisins de Pakhoi sont contaminés, évidemment par les allées et venues continuelles des gens apportant leurs denrées au marché, mais on y constaté surtout des cas isolés. Les villages de Ti-cok et de Senong-tune surtout ont été cruellement éprouvés. À Ti-cok il y avait plus de 10 cas mortels par jour. Enfin à partir du 10 Août l'épidémie été en pleine décroissance, et s'est terminée vers le 15 du même mois, ayant été très violente, mais en somme de peu de durée. En Septembre on cite encore à Pakhoi de loin en loin quelques cas isolés mais non mortels.

Vers le 20 Août le choléra se montre au village de Kao-tak; comme pour Ti-cok l'épidémie sévit très durement (une dizaine de morts par jour dit-on) mais dure peu. Ce village, port de jonques très populeux, situé a 6 Km. environ de Pakhoi, qui compte 1500 habitants, à été doublement éprouvé. Dans les premiers jours d'Août la peste bubonique y avait fait son apparition, et dès l'origine sévissait avec intensité. Il est très difficile d'avoir des renseignements exacts sur cette épidémie car la population très effrayés par la grosse mortalité, ne veut pas en parler, craignant dans sa superstition, que la seule
TABLEAU STATISTIQUE DE MÉTÉOROLOGIE POUR 1907.

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Les températures sont données en degrés centigrades ; la hauteur d'eau en millimètres ; la Moyenne hygrométrique est ainsi évoluer. 100 représentant la saturation.
énonciation du nom de la maladie, ne la lui donne. Cette épidémie de peste a pris fin vers le 1er Septembre. La peste n’a pas été constatée à Pakhoi même, non plus que dans les autres villages voisins, elle semble s’être cantonnés dans Ti-cok. Il est étonnant que vu le mouvement continu et très important d’échange qui se fait entre cette ville et Pakhoi, cette dernière soit restée complètement indemne. Aucun cas de choléra n’a été constaté chez les Européens ou dans leur personnel. Bien avant l’apparition du choléra, au commencement de Mai j’avais noté une recrudescence très notable de diarrhée et de dysentérie; actuellement encore, ces deux affections qui avaient presque disparu au moment de l’épidémie de choléra, reprennent avec une grosse intensité, mais on ne signale pas de morts dus à ces affections.

Je n’ai pas entendu dire qu’une épidémie quelconque ait sévi soit sur les bestiaux soit sur les animaux domestiques.

Je joins à ce rapport un tableau statistique de Météorologie dont les indications m’ont été gracieusement fournies par le Révérend Père Pénicaud, chargé de l’observatoire Français à Pakhoi.

HEALTH REPORT OF HOIHOW FOR YEAR ENDING OCTOBER 31st, 1904.*

By H. M. McCandliss, M.D.

Several of the foreign children have had measles, and amongst those who have been living at the Hoihow Light Station there has been some malarial fever. There have been several cases of whooping cough. In other respects the general health of the foreign community has been good. Facilities for out of door sports have contributed much toward the general well-being of the staff.

In the native community there have been none of the terrible epidemics of years past, and whereas during the plague years the population had to be recruited from the country and adjacent sea port towns, it has well held its own for the past two years. The French dispensary has continued its ministrations in Hoihow and in Kiung-chow, both under Dr. Feray, and the American Presbyterian Hospital in Hoihow has been continued under Dr. McCandliss.

Of mycetoma or fungus foot there have been four cases; all women, and in each patient the disease has been confined to a single

*For the explanation of the publication of this and other few old reports, see Editorial in the issue of November, 1907.
foot, and not extending into the leg bones. If it were not for the intense prejudice against the deformity, amputation would be the proper and radical treatment. In one woman of sixty-two, in whom locomotion is not now so important a factor as in the days of her working life, all the soft bones of the foot and part of the os calcis were removed with chisel and scoop. Repair has been very tedious, partly owing to the frequent strong antiseptic solutions forced through the drainage tubes to obviate a recrudescence of the disease. A much younger woman's foot was dealt with after the same manner, but not so extensively and a second operation will be necessary. The third and fourth cases have been treated by a sharp irrigating spoon following the sinuses and subsequent daily irrigation. Owing to the general structure of the foot bones there is always an admirable chance for some of the fungus to remain in some unexplored crevice and propagate. In the above four cases tonic treatment has been pushed to the limit.

The region to the east of Hoihow seems to be rich in vesical calculi, and it looks as if a large harvest is to be reaped in the future. During the year, and according to the nature of the case, we have done litholapaxy and the lateral and suprapubic operations. It may be well to mention that we have had no deaths from any surgical operations during the last three years. In two cases where the crushing operation was used it was considered wise to extend the procedure over two or three sittings at intervals of ten days.

We have had fewer cataracts and more of those desperate cases of entropion, where all four lids have to be operated on. If the condition has been of many years' standing, the cornea may be full of scar tissue from long continued irritative keratitis, or the cornea may be covered with opaque fibrous membrane. In other cases, however, the filminess of the cornea rapidly subsides and the patient is delighted with his restored vision. Frequently granular lids are associated and require several rubbings with bluestone.

There has been the usual crop of enlarged spleens; thirty-three of the in-patients having spleens that either reached to the median line or else passed beyond it. During the first week the patient has fifteen grains of quinine daily, after which the routine treatment of quinine, iron, and arsenic is pursued. Although it is the custom to either paint weak tincture of iodine over the spleen, or else to rub in some of the red iodide ointment, we do not expect it to do much more than satisfy the patient that he is having something done for the outside also. We would like to push the arsenic treatment more, but the natives here bear arsenic badly and even the small doses have to be watched, lest
blood and mucus appear in the stools. Once or twice a week the maximum dose of quinine is again given. These patients are apt to remain with us about two months and then take some medicine home with them to complete the cure. While the very chronic cases are not expected to decrease much in size, the comparatively recent cases do so. Whereas the conjunctiva, face and hands have been yellow and muddy, the urine reddish, the blood pale and watery, and the whole system weak and debilitated, we soon find all these conditions changed, and the languid, sick expression is lost, and the patient assumes an appearance of well being. Four of these spleen cases came to the hospital not because of the enlarged spleens, but because of the serious nose bleed with which they so frequently suffered. We are very careful not to perform any operation involving the loss of blood, even if it be but the extraction of a tooth, if we know that the spleen is enlarged, as several experiences in the past have taught us the possibilities of uncontrollable hemorrhage. We have not only to separate these enlarged spleens from other cases, but as an additional precaution, several attendants go around every night with butterfly nets and catch such mosquitoes as are to be found in the wards. In order to facilitate the finding of the mosquitoes the walls must be kept whitewashed. We would be glad to screen our malarial patients with mosquito nets, but we cannot prevail upon them to tuck the curtain in properly, so that not only does the net not protect from mosquitoes biting them and afterwards biting others, but the net, owing to ineradicable Chinese habits, soon becomes a very dirty ornament.

One of the spleen cases is that of a woman, not yet thirty, with an ovarian cyst. The enlarged spleen rules out a radical operation. The cyst was tapped and a little over one hundred pounds of fluid was removed at the one sitting. This is the largest tumor we have seen in the island. Of course the tapping is merely palliative and will have to be repeated. In the meantime we are trying to reduce the size of the spleen. The treatment has to be suspended from time to time on account of a recurring nausea which seems to be a concomitant of the ovarian disease.

Although the natives of this part of China have frequent feast days in which they gorge themselves with food, there are many of them who when taken month by month, are very much underfed. There are others who on account of some taint as of syphilis, or of tuberculosis, or of the depression and blood cell destruction of malaria, do not assimilate enough fat to keep them in good physical condition. During the year there have been about thirty cases of women and children with
enlargement of the glands of the neck and arm pits and enlargement of the joints. In these conditions a certain amount of cod liver oil is readily taken, but not being satisfied with what internal administration might do, we have daily used up nearly an ounce of ordinary olive oil by rubbing it into the arm pits, flanks, and groin, and the improvement has been so conspicuous that this external treatment has been extended to all of those whose systems are markedly below par.

This matter of giving of oil rubs certainly takes time, but it is a duty which can be performed by the less intelligent of the attendants, and the patients have come to look upon it as being a very important part of the treatment. The bad spleen cases are very much improved by the oil rubs. Several old women who were being treated for other affections, but who also had chronic bronchitis associated, have been charmed with the effect of rubbing with olive oil saturated with camphor. Four of the half grown girls in the boarding-school, all of whom had coughs and two of whom had tubercle bacilli in the sputum, were ordered to be thoroughly rubbed with oil every night, and the improvement was rapid and satisfactory; two of them no longer requiring treatment, and the two with tubercle have now good chest expansion, and swing on the ropes of the merry-go-round with zest.

There is even a stronger tendency with sick Chinese to treat themselves as invalids than there is with Europeans, and they are too willing to lie on their beds in the ward. For this reason swings have been put up in the yard, and, together with a half dozen pairs of stilts and a giant stride pole, they have played a part in weaning them from their indolence. Those who really cannot walk without helps are provided with crutches and encouraged to use them.
Not the foundation stones of the new hospital in Hwaiyuen, but the bladder stones removed in the last two years by its chief-surgeon and lithotomist, Dr. Samuel Cochran.

THE IMPERFECTIONS OF THE CONSTITUTION.

"Tory in an Inland City" hits the mark when he calls attention to the fact that the Constitution was revised too hastily at the last Conference. Not six months had passed before the Executive began to appreciate this fact, and we are inclined to think that it would have been better to have left the thing alone, with the minor imperfections that existed, than to have hurriedly corrected these and at the same time introduced certain others which will probably embarrass us considerably before we are able to have them resubmitted to the Association.

Several of the points made by "Tory," or Tartar, as we should have thought more appropriate, are well taken. The wording is faulty, and in a number of places not only shows the results
of too much haste, but even opens the constitution to various possible constructions. What should be extremely simple and unmistakable is quite the reverse.

We still hold, however, that the triennial meeting is the best possible court of final appeal. This does not mean that it is satisfactory by any means, but the question has often been up for discussion and was thoroughly hashed out at the last conference and the general sentiment of those present was so expressed. A referendum through the mails or through the Journal has the fatal defect that it is never answered by even a good number of the total membership. There are more votes cast by far at a conference than by any referendum within our memory, with the exception of the recent medical school question, and in that case it was so evidently a matter of self-interest that it does not apply as an argument for the larger number of cases where the inducement is not so personal. The old method of election, for instance, brought usually no responses whatever, never more than two or three.

The worst muddle in the constitution as at present is on the subject of membership. Article IV., Sec. b., should apply to honorary membership only, and the large number of medical practitioners in the East should certainly be eligible to corresponding membership without the delay of waiting for a triennial conference. It is discourteous and absurdly short-sighted to provide otherwise than for their prompt election to corresponding membership in the only medical society in these parts. We consider that this is so dangerous a position and so unwise a stand that it is probably worth the Association's holding a special general meeting for the express purpose of placing ourselves right in the matter.

And while we are about it, we might as well do whatever else in the way of alteration to the constitution seems advisable, and we respectfully suggest to the president of the Association that he appoint a small committee to reconsider the constitution with care and to present to us at the next general meeting, whenever that shall occur, a thoroughly correct and well digested copy, closely along the lines of the old in all essential respects, but consistent and practical. And who so good a chairman for this committee as the man who has shown such analytical interest in the same, the "Tory in an Inland City?"
THE PATHOGENESIS OF TYPHOID FEVER.

"The typhoid bacillus does not develop in the intestinal contents except under unusual conditions." Such an unqualified statement, coming from the Massachusetts General Hospital, makes one stop and question whether it is not high time to revise one's early notions of the pathogenesis of typhoid fever. It makes one hope that the term which has been given in the advance sheets of the medical vocabularies of the C. M. M. A. (腸熱病) may not be the finally accepted term to remain on record in the dictionary soon to be published. The view of Coleman and Buxton as to the nature of typhoid fever was given to the public in an address on March 7th, 1907, and appeared in print in the American Journal of the Medical Sciences for June, 1907. Comment on this view appears elsewhere, but for the sake of comparison it may be well to restate the essential features in the conclusions of these two workers. They believe, as a result of a study of 1,602 cases, that "the bacilleemia in typhoid fever does not constitute a true septicemia, but it represents an overflow of bacilli from the lymphopoietic organs." And further, that "the clinical picture of typhoid fever results only from infection of the lymphopoietic organs by the typhoid bacillus, with invasion of the blood stream and destruction there of vast numbers of bacilli." It is hardly necessary to add that these workers believe that the typhoid bacillus is present in every case of typhoid fever throughout its course.

The question of pathogenesis is taken up from another viewpoint in the more recent paper of Drs. Pratt, Peabody and Long, read in June, 1907, and printed in the Journal of the American Medical Association for September 7th, 1907. Contrary to the results obtained by many earlier observers, it appears that in a large percentage of cases it may be impossible to find the typhoid bacilli in the intestinal contents of patients known to be suffering from typhoid fever, even after repeated examinations. It seems as if some of the earlier observers must have failed to distinguish sufficiently accurately between B. coli and B. typhosus. At all events the very careful investigations of these observers in Boston show that B. typhosus was isolated in the stools of but 17 out of 100 cases, i.e., in 17 per cent. In view of the recent observ-
ations that typhoid bacilli may be carried for months and years in
the intestines of certain persons, now known as "bacilli-carriers,"
it is reassuring to find that in all probability not a very large pro-
portion of patients excrete any typhoid bacilli from their intestinal
channel. Turning first to the conclusions of Pratt, Peabody and
Long, we read: "Typhoid fever is a general infection. The
typhoid bacillus is an invasive organism. It is able to develop in
the blood and the tissue juices of the body. It does not develop in
the intestinal contents except under unusual conditions. It more fre-
quently occurs in large numbers in the urine than in the feces.
The gall bladder is a favorite habitat of the typhoid bacillus, and
it develops luxuriantly in the bile. The typhoid bacilli in the
intestine come in large part from the bile. They are rapidly
destroyed in the duodenum and jejunum, and it has been recently
shown that the wall of this portion of the intestine has marked
bactericidal power. It is probably that the destruction of all the
typhoid bacilli that enter with the bile rarely occurs within the
lumen of the bowels. The number, however, becomes so greatly
diminished that their presence cannot be demonstrated in the stools
of many patients with typhoid fever. . . . (With the most favorable
methods bacilli were recovered from only 21 per cent. of
febrile cases and were usually found in but small numbers.) It is
not improbable that if there was a method that permitted the bacterio-
logical examination of the entire stool for typhoid bacilli as has
been devised for the detection of cholera bacilli, a few micro-
organisms might be found in every stool. This does not, however,
affect our conclusion that the typhoid bacillus does not find con-
ditions favorable for its growth in the intestinal contents. It is
demonstrated in such a considerable proportion of cases because it is
eliminated in great numbers by the bile. . . . It may be found in the urine and sputum when absent from the stools. The portal
of entry of the typhoid bacillus is not known. There is no more
evidence in favor of entrance through the intestine than through
the tonsils or the gastric mucosa."

A little thought will show that the conclusions cited from the
work of the two sets of observers are not in conflict. Both agree
that typhoid fever is essentially a septicemia. Coleman and Buxton
carry somewhat further the study of this condition of the blood.
They find that the lymphopoietic organs are the natural place of the growth of the bacillus, and on the other hand, the other workers have shown that the gall bladder is a favorite abode for it. It would seem that in the lymphopoietic organs there was definite multiplication, and probably from these occurs the transmission into the blood. The bile probably becomes infected from the blood and is itself the great source of infection for the intestinal canal. Baumgarten stated years ago that the typhoid ulcers in the intestines ought to be regarded as metastases rather than as primary lesions. His view has been revived by Schottmuller. It is difficult to explain the absence of intestinal changes in cases of so-called primary cholecystitis due to the typhoid bacillus if the intestinal lesions were due to the action of typhoid bacilli in the intestine. In these cases of typhoid cholecystitis, in spite of the enormous discharge of bacilli into the intestine with the bile, there are no intestinal manifestations. Not only so, but in one fatal case there were no typhoid ulcers in the intestine, although bile containing typhoid bacilli entered the duodenum freely.

It has been shown, not only that there are cases of typhoid fever without intestinal lesions, but that there are cases of typhoid ulceration of the intestine without disturbance of the health; in other words, without typhoid fever.

It is undoubtedly true that bacilli are not thrown off in large number from the ulcers as was formerly taught. If this were so, we should expect to find a larger number of bacilli low down than high up in the bowel. Exactly the opposite condition actually exists. In fact, not only are bacilli not thrown off commonly from the ulcers, but von Drigalski has been unable to cultivate bacilli from the surface of ulcers when they were recovered from the adjacent mucous membrane.

The practical conclusions for the general practitioner are obvious: 1. While the urine and feces in a case of typhoid fever are to be most carefully disinfected, every part of the patient must be regarded as capable of transmitting infection. 2. As far as practicable bacteriological examinations should be made of the stools of all cases that have recently had typhoid fever, at least three times during a period of several months, in order to determine that the convalescent patient does not continue to be a menace to the health.
Editorial.

of the community. 3. If he is found to continue to excrete typhoid bacilli for any continued period of time, the desirability of opening up the gall bladder with a view to ensuring free flow of its contents, and removal of any adventitious material, should be seriously considered. E. H. H.

NOTES.

On page 295 of our last issue (November 1st, 1907) cuolin should read creolin and cunosol should read crenosol. Our apologies to Dr. Hart for the errors.

We would say for the benefit of those interested in work among the Chinese insane and especially of those contemplating the foundation of refuges or hospitals for the same, that an interesting series of three papers on the general subject is now in preparation by Dr. C. C. Selden, of Canton, and will begin in our next issue.

PUBLICATION COMMITTEE.

The issue of the second volume of Dr. Fulton's translation of Penrose's Gynecology has been unexpectedly delayed, as the amount of matter proved larger than was anticipated. It should now be ready for distribution. Dr. Fulton tells me that copies of Dr. Penrose's Gynecology (in English) can be obtained from the China Baptist Publication Society, Canton.

Dr. Venable's Bacteriology should be ready by March. Those who propose teaching it should obtain the original from the U. S. A.; the title is "Microscopy and Bacteriology, by P. E. Archiuard, M.D. The Medical Epitome Series, Lea Brothers & Co., Philadelphia." Or it can be ordered through the mission presses or Mr. Ed. Evans.

Let me again urge all teachers to obtain from home the original works. They will find that it will greatly simplify teaching. This is especially true of a subject like physiology.

Time and again one hears incidentally of some who write to the press for a book and cannot obtain it. A list of the new books is given on the advertisement page (inside of cover). The old books can be found in the Presbyterian Press catalogue and Dr. Whitney's translation of Gray's Anatomy is advertised separately. In the event of any failure to obtain the work desired please write to me (Dr. Cousland, 2 Shantung Road, Shanghai).
ASSOCIATION NOTES.

New Members of the C. M. M. A.

 Joined through the China Medical Journal.

Nina H. Beath, M.B., Ch.B., Ed., ... ... E. P. M., Swatow.
J. W. Jackson, M.B., C.M., ... ... Shanghai.

 Joined through the Korean Branch, November, 1907.

H. C. Whiting, M.D., Am. Presb., Chai-ryeng.

With this number is sent out the medical statistics blank for 1907. As there is no need to ask every year for detailed information of the financial methods, that part has been omitted. Let no one hesitate to send in his or her figures either for fear that they underestimate the work or that it is too small to be worth representing. We all know that circumstances differ, and that figures can give but an imperfect picture of what is being done. Yet what they do tell us is of such great interest and value that it is important for every one to fill in the sheet and return it as soon as possible.

Attention is also drawn to the sheet issued with the November Journal. Will those who have not yet returned it please do so now? The information asked for is required in connection with various aspects of the Association's operations. Some very interesting educational details have already come to hand, and it is hoped that when all are collated and published the information will be of real value.

The recent formation of the Shanghai Medical Missionary Society adds a fifth branch to the C. M. M. A. Medical missionaries within convenient travelling distance of Shanghai are eligible for membership, and those passing through Shanghai are cordially welcomed to the meetings. These are held on the third Wednesday of each month, from October to June. Dr. Tucker, of St. Luke's Hospital, is secretary.

Will members who are going on furlough please note that the Journal will be sent to their home address free of extra charge? Some leave without notifying us. Others ask that it be not sent to them until further notice and while absent pay no membership dues. On return they may or may not renew their membership.
A card to the Presbyterian Press and one to the secretary giving the home address and date of leaving China is all that is required. The secretary is very anxious to be in touch with the movements of all the members and begs that they will give him notice of going on or return from furlough or change of station. The editor and he will be glad of a call while in Shanghai.

Hearty congratulations to Drs. McAll and Somerville on their convalescence from severe attacks of paratyphoid. By a curious coincidence both were ill at the same time, one at home and one in Wuchang. We regret to hear that it is considered necessary for Dr. Somerville to go home on sick leave. May our brethren have a speedy and thorough restoration to health.

Dr. Phillips reports nineteen members in the Manchurian branch. Excellent! The Association will not be properly organised until the great bulk of its membership is grouped in branch societies, each provided with an alert secretary. Will those members in districts where the formation of a branch is feasible do their best to stir each other up to an interest in the subject and proceed to organize one as soon as possible?

And may I again appeal for the enrollment of all outsiders? Every autumn sees the arrival of new medical missionaries, and there are still a number of older ones who have never joined or who have dropped out. It is difficult for those in Shanghai to learn of the new arrivals. It is “up to” the membership to tell them of the C. M. M. A. and the Journal and invite them to join. A proposal blank is sent out with this number of the Journal.

Dr. A. K. Baxter, of the English Methodist Mission, Yung-p'ingfu, writes to a home paper:—

"We have just returned from a six weeks’ stay at the Union Medical College, Peking. I took a class of thirty-one students through a course of practical pharmacy. My notes were printed by a duplicator as we went along, and copies given each student. Both the B. P. and the U. S. P. were used, as some of the students come from American missions. Prescription writing formed part of the course. At first the students wished to write the whole in Chinese character, but I insisted on the body of the prescription being written in Latin. It was difficult to get them to understand about the cases and declensions, as only one had some understanding of Latin. We placed more stress on the metric
system than on the English weights and measures, as the former will probably become official in China, and is also on the decimal pattern, like their own domestic weights and measures. The college itself is well arranged for teaching purposes. It cannot but be the chief centre for medical education in North China. The government is arranging to start a medical school of its own, but it cannot provide such facilities for teaching students in their own language. They wish their students to understand and listen to lectures in English. One all-important feature in the Union Medical College is its Christian atmosphere. Many of the students come from mission hospitals, and during their course still keep an active interest in mission work."

There are doubtless many of those going on furlough this spring who wish to take a course in tropical medicine. Their attention is drawn to the notice in our advertisement columns of the London School of Tropical Medicine.

I shall be glad to furnish the dates of the post graduate courses at the various teaching centres in Great Britain to any who may apply.

It will be good news to many that the new edition of Sir Patrick Manson's Tropical Diseases is now out.

P. B. C.

SUBSCRIPTIONS TO THE PUBLICATION COMMITTEE FUND.

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<td>Drs. Starmer and Miller (Women's Hospital, Mukden)</td>
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<td>Shantung Road Hospital, Shanghai, per Dr. Davenport</td>
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The committee returns very hearty thanks to those who have subscribed to its funds and draws the attention of those whose interest has not yet materialised to so good an example. So far
not a single subscription has been received from the Chinese. It is perfectly certain that if this translation work were brought to their notice in an adequate way many would be willing to help. Some may even desire to finance a whole book. This will cost anywhere from $500 to $2,000 according to the book chosen. A member of the C. M. M. A. on going home on furlough recently asked for a list of the books to be published, with the cost of each, in the hope that he can find friends to undertake singly or conjointly the expenses of translating and printing one or more.

Book Review.

*Health Hints for Missionaries to China.* (Published by the Medical Missionary Association of China. Presbyterian Mission Press, Shanghai. Price 20 cents each.)

This booklet, compiled by order of the Association and authorized by the last Conference, is the work of Drs. Boone, Cousland and Davenport, and is thoroughly well adapted to supply the need it was designed to meet. It is carefully done, and is neither too large not to be of easy reference and quickly absorbed, nor too small to cover the important points of the matter.

It is designed primarily for the use of mission boards, that they may understand the health question intelligently, and to be by them put in the hands of all accepted candidates for mission work in China. It will also prove a useful hand-book to put in the hands of lay missionaries on the field and of anyone contemplating a long or short stay in China and the East. The divisions are:

- The home side, including the choice of candidates.
- The climate of China.
- The outfit needed.
- The voyage out.
- The foreign side.
- Medical notes.

We had the privilege of seeing the manuscript and of going for it before publication and could not even satisfy our vanity to the extent of serious criticism at that time. It would be obviously unworthy to do so at this late date, and we are happy to confess that we still think it excellent.
Beri-beri.

The Cause and Prevention of Beri-beri is the title of a book by Dr. Braddon, State Surgeon, Negri Sembilan, Federated Malay States. In it he deals with the vexed question of the aetiology of this interesting disease. His conclusions are that beri-beri is due to the consumption of stale decorticated (white) rice (uncured rice), which at times contains a poison, whereas white rice made from padi, which has been boiled in the husk and then dried before stripping off the envelopes (cured rice), is always innocuous at whatever period after cleaning it may be eaten, whether, in fact, it be stale or not. The author has collected an enormous mass of detail to support his contention, and the book, big as it is, is well worth reading. The rice theory has many opponents, but after perusing all the evidence one is inclined to come to the conclusion that rice does play a part in the production of the disease, or, at least, that further experiments should be carried out to prove or disprove its action as a cause. All that is required is to use “cured rice” only in all or part of the government institutions—goals, asylums, etc.—for a period of a year or more and to note carefully the results. If beri-beri disappears then the sceptical must admit the truth of Braddon’s views.—British Medical Journal, 21st September, 1907.

Histology of Tuberculous Sputum.

E. Löwenstein deals with the significance of the presence of tubercle bacilli within the leucocytes in tuberculous sputum and gives in tabulated form details of fifty-six cases in which this phenomenon has been observed. The following are his results: (1) Tubercle bacilli are found within leucocytes with from one to three nuclei in about 10 per cent. of cases of manifest tuberculosis of the lungs. (2) This intracellular disposition of the bacilli occurs (a) in well-marked chronic forms of the disease and (b) also in recent cases with a tendency to recovery. (3) The intracellular disposition of the bacilli very frequently points to a rapid disappearance of the bacilli from the sputum. The author also describes a case of rapid tuberculosis of the genital organs followed by tuberculosis of the bladder in which the intracellular position of the bacilli was first observed after tuberculin injections had been employed.—British Medical Journal, February, 1907.

The Acetonemic Conditions of Children.

From the clinician’s standpoint patients in whose urine diacetic acid and acetone may be detected by ordinary methods of examination may be classed into three groups:

1. Those who usually show no symptoms of acidosis. Included among these are cases of excessive fat ingestion, starvation, high fevers, gastric ulcer, malignant disease, and many others, perhaps all due to deprivation of carbohydrates.

2. Those who while the subjects of other morbid states have also symptoms of acid poisoning which may, to a certain extent, be marked by those of the primary condition. Such are persons
suffering from diabetes, a certain type of pneumonia, intracranial disease, toxic forms of gastro-intestinal disturbance, epidemic diarrhoea, sepsis, intestinal obstruction, acute peritonitis and certain poisons, including morphine, phloridzin, and salicylate of sodium.

3. Patients who suffer from uncomplicated acidosis which per se may terminate fatally. These are the subjects of (a) delayed anaesthetic poisoning, (b) recurrent, cyclical, or periodic vomiting—conditions which may be designated by one title, "Cryptogenic acidosis."

The writer after giving several examples of delayed anaesthetic poisoning and showing that the condition of the liver—acute fatty degeneration—was the same as in cases of cyclical vomiting, finally sums up the question as follows:

1. Acetone and diacetic acid are found in the urine in a number of conditions, and may be, but are not necessarily, associated with symptoms of acidosis.

2. Cyclical vomiting and delayed anaesthetic poisoning are examples of acidosis of unknown origin.

3. Delayed anaesthetic poisoning is due not so much to the kind of anaesthetic used as to the state of anaesthesia.

4. The acetone series is a product of the imperfect oxidation of fats, and hence in these conditions the oxidizing power of the tissues must be inadequate.

5. This is further demonstrated by the condition of the liver.

6. There is evidence in favour of the failure of oxidation being due to too great a supply of fat to the chief seats of oxidation rather than to a primary deficiency in oxidizing power, although the latter alternative cannot be excluded.

7. Probably this may be brought about by a variety of toxins which act like phosphorus.

8. The determining cause of acidosis is the accumulation of the precursors of acetone, either from excessive formation or deficient excretion.

9. Anaesthetics are dangerous to patients who are the subjects of acidosis.—British Medical Journal, September 28th, 1907.

Treatment of Sprue (Psilosis): A "method has gained for an irregular practitioner (Peter Sys) in Shanghai some reputation. It consists in the repeated administration of purgatives alternately with or before the exhibition of large quantities—two teaspoonfuls at a time—of some form of carbonate of lime, believed to be powdered cuttlefish bone or powdered crabs' eyes.—" Tropical Diseases, Manson, Fourth edition, p. 481. There is no doubt whatever that the practitioner in question made some remarkable cures in cases of sprue, which had been despaired of by the regular practitioners in charge, and won for himself a certain degree of respect. But the remedy has never proved as efficient in other hands than his own. It is only to be regretted that he did not see fit to sell his complete experience for a sum within the reasonable means of the community or, under the inspiration of great opportunity, taken in exchange for its free gift, the unstinted gratitude of his fellow-men. Peter Sys is no more, and he has left behind him but an imperfect knowledge of the drugs he used in this intractible disease, and the name of a clever but small-minded man. If ever a man had one talent and wrapped it up tight and sealed it and buried it deep in six feet of Yangtsze mud, that man was Peter Sys.
The first meeting, at the invitation of Drs. Boone, Davenport, Jefferys and Cousland, was held at No. 2 Shantung Road, on November 11th, at 4 p.m.

Those present were:—Drs. Boone, Davenport, Reifsnyder, Lacaca, Parrott, Lincoln, Myers, Jefferys, Garner, Newell, Tucker, Lee, Hamilton and Cousland.

Dr. Boone was called to the chair and Dr. Cousland as secretary of the meeting. It was resolved, that those present form a branch of the C. M. M. A. to be known as the Shanghai Branch of the China Medical Missionary Association, and to include all those within convenient traveling distance of Shanghai.

The following were appointed as the committee on constitution: Drs. Davenport, Reifsnyder, Jefferys and Cousland.

The meeting was adjourned until 4 p.m., December 11th.

The second meeting was held at Dr. Boone's residence at 4 p.m., December 11th.

After reading the minutes, the Committee on the Constitution read its report, which, after being discussed and amended, was adopted as follows:

**Rules of the Shanghai Branch of the China Medical Missionary Association.**

1. This Society shall be styled "The Shanghai Branch of the China Medical Missionary Association."
2. The object of the Society shall be the cultivation and promotion of medical missionary work in all its aspects and the establishment of a brotherly bond of union between the members.
3. The officers of the Society shall consist of a President, a Vice-President, a Secretary, and a Treasurer, who shall form a council and manage the affairs of the Society. The outgoing Vice-President shall become the President for the ensuing year, and the remaining officers shall be elected by ballot, consecutively, without nomination, at the annual meeting in June.
4. The Society year shall run from October to June.
5. Meetings shall be held on the third Wednesday of each month, to commence at 4 p.m. All meetings shall be opened with prayer.
6. At the meeting in June, in addition to the ordinary business, the officers shall be elected, reports of the Secretary and Treasurer read, and the programme arranged.
7. At least one meeting in every three shall be a clinical meeting.
8. The Secretary shall give the members three days' notice, in writing, of every meeting.
9. The following are the Regulations for the conduct of each meeting:
   a. The first half hour of each meeting is to be devoted to preliminaries, business, and the showing of cases.
   b. Papers shall not exceed twenty minutes in length, and after speeches shall not exceed ten minutes. Meetings shall not be prolonged beyond 6 p.m.
   c. Order of Business.—Opening devotion, minutes, business arising out of minutes, cases to be shown, paper for the day, discussion, other business.
   d. On all points not specially provided for by the Rules of the Society " Robert's Rules of Order " shall be followed.
10. Constitution of the Society, etc.:
   a. The Society shall consist of ordinary and associate members. All legally qualified medical missionaries in Shanghai and adjacent cities shall be eligible as ordinary members. Associate members may be elected from amongst any non-missionary medical men in the said district, who may be in sympathy with the objects of this Society.
   b. Ordinary and associate members may be proposed at one meeting and elected at the next. No election shall
Correspondence.

To the Editors of
"The China Medical Journal."

Dear Sirs:—I hope you will grant me a little space in your next issue for a few remarks anent the new Constitution and By-laws of the Medical Missionary Association of China.

One feels tempted to point out various minor faults, errors of composition, mal-arrangement of headings, etc., but to dwell at too great length on such petty points would only have the effect of hopelessly prejudicing against oneself those leading members of the Association who were mostly concerned in drawing up the constitution in its present form. With them I have no quarrel; for they are doubtless busy men, and if one is too busy, something has to suffer; the only pity is that what suffered in this case was the style of composition of the constitution.

One cannot refrain from pointing out the curious irregularity in the use of "this" and "the" in reference to the M. M. A., e.g., Art. I, This Association; Art. II, The objects of the Association; Art. III, Members of this Association; Art. IV, The vote of the Association, etc.

Then one wonders whether there is really any difference between the "general meeting" which alone has power to alter the constitution and the "regular" meeting that is authorised to alter the "by-laws."

Article III does really seem to be clumsily put. Take the first paragraph, which deals with two distinct things in one sentence: first with the individual members, who are to be graduates of a recognised college, and secondly with the Association, which is divided into three classes of members. Surely the fourth paragraph (III) "Honorary members, who shall be composed of," etc., is not properly constructed; if it is, then there must be something wrong with I and II. Still it is not my purpose to try and exhaust the list of little points with which one might find fault; to my mind there are graver
issues wrapped up in our adoption of the new constitution.

I think the first question to be raised should be, *Is the Triennial Meeting the best possible final Court of Appeal?* In answering this question one must bear in mind that the members of the Association are scattered over a very wide area, thus making it practically impossible for some members to get to a conference in Shanghai; further, in many hospitals (especially in the less richly endowed hospitals connected with British missions) there is no competent native who can take charge of the hospital for a fortnight or three weeks— the society cannot afford a good enough salary to keep such a man— so the doctor must either give up the conference or close his hospital. One cannot expect subsequent conferences to be attended by as large a proportion of members as this last one was, and the tendency will be for missionaries on the lower reaches of the Yangtse, and the nearer coast ports, and for those working under wealthy American societies (and, possibly, for those newly out from home, who have not yet got into the work) to attend these triennial meetings in larger numbers than their less favoured brethren. There is certainly a tendency for "the opposition" to attend these conferences rather poorly, e.g., one member does not feel enthusiastic on the subject of translation of medical books, a subject that is obviously to bulk very largely at an approaching conference, so he does not go (N. B.— It is very stupid of him not to go, but still)— the result is that the Association unani mously approves of fresh expenditure to assist the translation of books.

So long as the conference confines itself to passing fatuous resolutions on the subject of cigarette smoking, etc., it leaves many of us undisturbed, while, I suppose, all of us are interested in some of the clinical discussions that take place, but when it comes to revising a constitution and passing resolutions whereby it accepts financial responsibility and endeavours to render all the members— whether present or absent— liable to be drawn upon to the amount of some forty or fifty dollars a year, then, I think, it goes beyond its powers, and an appeal should be made to all the members by means of a referendum, conducted, preferably through the *Journal*, to save extra expense.

I have already trespassed unduly upon your space, Mr. Editor, but I would like to raise one more question, and that is connected with the election of members.

It is not clear from the second paragraph of (a) in Article IV (referring to the possibility of members objecting to the election of a new member) whether *any* embryo member can be objected to, or only one proposed by two members and having his or her name published in the *Journal*. Article V, however, seems to make it clear that any little "local branch" consisting of "three active members" can elect a member so that *no one* can put him out, while if— in that particular place— there are only *two* members the unfortunate candidate has to run the gauntlet of all the members up and down the coast who might, for some obscure reason, wish to black-ball him. Doubtless this is very largely a matter of opinion, but to my mind three is too small a number of members to form a branch, and *in any case* I think permission should be obtained (either from the Executive or from the Association in general meeting) before a branch is recognised or its members regarded as members of the China Medical Missionary Association.
There is much remaining that one might criticise, but I have already written at greater length than I had anticipated.

One more point and I am done... I would like to see the Journal come out every month and discussions carried on in its pages from month to month.

If my letter reads crudely, and shows—perhaps as glaringly as the Constitution—the evil results of hurry and carelessness, then be merciful, but remember that a constitution is intended to remain "a thing of beauty and a joy forever," while this letter merely represents the rambling remarks of a Tory in an Inland City.

To the Editors of "The China Medical Journal."

DEAR SIRS: A student in the Shantung Union College at Weihsien came to me about the 17th of September with what turned out to be a case of bubonic plague. He came here from near Hwaiyuen, Anhwei, and I have thought you would be interested in his case. His name is Swen Hai-i, and I should think he is about 22 years old. Of course in coming here via Chinkiang and Shanghai he may have been exposed to the infection, as cases have been reported in the famine region for some months past. His case seemed to be a very light one, perhaps of the "pestis minor" type, and fortunately no other cases have followed here, although over a month has elapsed since he was taken down.

He complained first of general malaise, constipation, headache, backache, etc., with a temperature running about 102 F. I thought the trouble might be only digestive, or perhaps a beginning typhoid, until some days later he mentioned a small painful lump in his left groin, which had appeared the previous night. I found the femoral lymphatics large and very tender on pressure, but no focus of infection anywhere on the leg. This made me suspicious, and I had the boy isolated as well as possible at once, disinfecting his room and the clothing of all other students who had been with him, with formalin gas.

The swelling in the groin continued to grow, becoming red and finally showing fluctuation about three days afterward. I then opened it and evacuated about an ounce of pus, which contained some red clots and small black fragments of necrotic tissue. A smear taken at that time and stained with methylene blue showed scattered groups of the bacillus pestis, with quite characteristic form and staining. No other bacteria were present in the pus examined. The wound was dressed daily; all discharges being carefully collected and destroyed, and healing took place in about three weeks. All this time the boy had to be kept in a mat shed in a vacant lot, as lack of funds has prevented us up to this time from having a suitable isolation building. This lack is one we feel very heavily here, with about 300 students of both sexes, gathering twice a year from a wide area to this one compound, and each a possible source of an epidemic. This case seems especially to show the ease with which plague may be spread, at least here in China, and the comparative certainty with which it can be checked if proper measures are taken.

Very sincerely,

CHARLES K. ROYS.

WEIHSIEN, November 11th, 1907.
To the Editor of "The China Medical Journal."

Dear Sir: In a letter lately received from Dr. Cochrane, of Peking, urging the Shantung missions to unite with the Peking scheme, the following statement is made:

"There is a strong and growing feeling that to establish a medical college in Shantung at the present juncture would be a grave strategical mistake. This feeling exists not only here but in other parts of China, where the subject of medical education has come up for discussion. The Medical Missionary Association of China strongly urges the establishment of schools in a few selected centers, and the opinion is that one is sufficient for North China at the present time."

In order that you may hear the Shantung side of the case, and that your sympathies and deservedly large influence may perhaps be enlisted in our behalf, I am sending you a copy of the reply sent to Dr. Cochrane.

If the "strong and growing feeling" referred to above really does exist, we in Shantung would like to know on what grounds it is based. It still seems to us that this province, with one-tenth the population of China, with fully 18,000 Christians, with the funds in hand to begin medical education, and with several veteran medical educators ready to take up the work, is entitled to one of the proposed medical schools, especially as it is the settled conviction of those who know most about Shantung that the Peking school is out of the question for our students.

We wish all success to the Peking school, and we realize that it is very desirable from their standpoint that we give up Dr. James B. Neal to assist in their work, but we believe that our Shantung missions have an equal opportunity and a greater responsibility for the school planned in Tsinanfu than for the school begun in Peking.

Very sincerely yours,

Charles K. Roys.

Weihsien, November 16th, 1907.

Weihsien, China, November 13th, 1907.

Dear Dr. Cochrane:

Your letter of October 28th, re our mission uniting with the Peking medical school, has been talked over with those who know the most about education in this province. Their conclusions quite agree with the report on the subject of medical education adopted by the West Shantung Mission (A. P.) at its recent annual meeting in Tsinanfu. I cannot do better than quote from that report, as follows:

"It is evident that the population of this province, nearly equal to that of Great Britain, are in great need of a trained body of men of their own race qualified with the best knowledge of modern medicine and surgery which can be given them. It must also be said that there is no agency at present which can at all adequately meet this need; while well-manned and well-equipped medical schools are being started in other parts of the Empire, none of these are near enough, or their fees low enough, for students from this poor and relatively isolated province. The school in Peking, which in time may be accessible by rail from this province, has its fees and expenses far too high for Shantung men. Our colleague, Dr. James B. Neal, who has recently visited that school, considers it quite out of the question for students of this province to attend there. For these reasons we believe that the opening of a medical school (in Tsinanfu) to be provided for on a generous scale, and to be capable of further expansion as the work develops, is a wise use of Christian money."

You may wish to know why we believe the Peking school out of the question for our students. The reasons as they have been stated by various authorities on education in this province are substantially as follows:

1. Our Christian students have not the funds required, and cannot raise them from native sources. The poverty of our people is very hard for outsiders to understand.

2. Our missions cannot subsidize enough students for our own needs without using up in ten years an amount equal to the entire fund now available for a medical school in Tsinanfu. $250 a year would be a conservative estimate of the amount required for each student. We need at
least eight men a year for our mission hospitals, provided all stay with us two years. To get eight men willing or fit to do the work required of them, we should have to send at least sixteen a year, at an expense to the missions of $4,000 annually.

3. Even if morally untainted, we do not believe it wise to send country boys to Peking, because they will never be satisfied with the salaries which can be paid, or the fees which they can earn in this province.

4. The above being true, we cannot abandon medical education for our own province even for the sake of assisting in the splendid work of the Peking school, and we feel justified in beginning with a relatively lower standard, if necessary to bring the training within the reach of our own people.

To the Editor of

"THE CHINA MEDICAL JOURNAL."

DEAR SIR: I have the honor to invite you to participate in the International Congress on Tuberculosis, which will meet in Washington, September 21st to October 12th, 1908. Under another cover I enclose the preliminary announcement, and I trust that you will give the Congress such publicity as your valued JOURNAL can offer to such an undertaking.

The American Committee on the Congress is sensible of the great responsibilities resting upon it, and asks the aid of the scientific men of your country, in order that the coming Congress may merit the honor conferred on our country by the choice of Washington as a meeting place.

Very truly yours,

JOHN S. FULTON,
Secretary-General.

To the Editor of

"THE CHINA MEDICAL JOURNAL."

DEAR DOCTOR: I am offering you the latest in warm stages, so far as I know. As we have a lot of broken plate glass here, you are at liberty to tell your readers who live in China that I will have the warm stage made here for them complete for 50 cents Mexican, including postage to any part of China. The price includes the fenestrated metal strip. First come, first served so long as the plate glass holds out. I need not say that the above price is only what it costs me. Advise whether the stage is wanted for use with or without mechanical stage.

Yours sincerely,

O. T. LOGAN.

CHANGTEH, HUNAN, Sept. 30th, 1907.

To the Editor of

"THE CHINA MEDICAL JOURNAL."

DEAR DOCTOR: Hearty congratulations on the last MEDICAL JOURNAL. It is a valuable number. May their tribe increase, for which there is every sign.

As to your query "A Question of Title," it is agreed in our medical firm that woman physician is preferred. Should I be designated as a gentleman physician, the inference would be ambiguous, to say the least. Not that one objects to washlady, saleslady, etc., but woman is a grand word, and let us use the grandest word we can find. It's worth while.

While I'm writing I would like to say that I have three valuable reprints along the line of present investigation work, all by H. B. Ward, Dean of Univ. of Neb. College of Medicine. He is in the forefront of workers along these lines in the U. S., and if the committee, or any member of it, would like to have these pamphlets, I shall be glad to send them, on condition that they be returned. The titles are as follows:

Data for the Determination of Human Entozoa. (With plates.)
The Influence of Parasitism on the Host.
The Parasitic Worms of Man and the Domestic Animals.
Please pass this information on (if it be such) to the one you consider the proper party. Some time ago I sent Dr. Ward samples of oxyurus, filaria immitis, and ascaris lumbricoides. He has called my attention to the fact that the oxyurus sometimes bores through the wall of the rectum, sometimes producing ulcers and even peritonitis. The pamphlet above mentioned last is rather old, being printed in 1904, but the others are more recent. With cordial Christmas greetings and best wishes for 366 days of the coming year.

Sincerely,

Francis F. Tucker.

P'angchung, December 19th, 1907.

Personal Record.

BIRTHS.


On December 4th, at the London Mission, Tsaoshih, near Hankow, the wife of Edward F. Wills, M.B., C.M., of a daughter.