Splenomegaly: Being a Report on a Hundred and Four Cases Met With in South China.*


In examining a patient suffering from malarial cachexia it is an easy matter to determine whether the spleen is or is not enlarged; it may be a much more difficult matter to discover the etiology of an obvious splenomegaly.

An endeavour has been made to elucidate the cause of the splenomegalies treated year by year in the hospital at Swatow, and over one hundred cases have been examined with this purpose. Most of the cases met with give a very chronic history (see Chart II), and all of them show very great enlargement, so they are embraced within the category 'Chronic and very great enlargement of the spleen,' which, according to a recent text-book on Medical Diagnosis, may be due to one of the following causes:

- Splenomedullary leukaemia,
- Lymphatic leukaemia,
- Mixed leukaemia,
- Chronic malaria,
- Kala-azar,
- Splenomegalic polycythaemia,
- Splenomegalic cirrhosis,†
- Splenic anaemia,
- Pseudo-leukaemia infantum.


†Splenomegalic cirrhosis is not mentioned in the indices either of Osler's or Dieulafoy's text-books of medicine. According to French, it "occurs in children and young people, and is characterised by enormous enlargement of the spleen, slight enlargement of the liver, anaemia without leucocytosis, haematemesis, clubbing of the fingers, jaundice, and stunted growth."
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Two additions to this list must be made, viz., 'Histoplasmosis,' described by Dr. Darling in the Panama Canal Zone,2 and Egyptian Splenomegaly, described by Drs. Day and Ferguson.3 One might think, too, of congenital syphilis as a cause of splenic enlargement, but in that condition the degree of enlargement is rarely so great as in the cases under consideration.

One may anticipate the detailed study of the blood conditions so far as to say that in no case did the red cells exceed 5,000,000 nor the white cells 6,500 per cubic millimetre. These facts definitely exclude both polycythaemia and the leukaemic conditions,* so that in seeking to find a cause for the Swatow splenomegalies one is faced with the possibilities of malaria, kala-azar, and splenic anaemia, as well as the two more recently described conditions to which reference has been made.

It may be stated at once that it is impossible to differentiate any one of the Swatow cases from Banti's disease, which is defined in Osler's text-book of medicine as: 'A primary disease of the spleen of unknown origin, characterized by progressive enlargement, attacks of anaemia, a tendency to haemorrhage, and in some cases a secondary cirrhosis of the liver with jaundice and ascites.' The paper will show how completely the cases described meet the clinical side of the description of Banti's disease. 'It is a disease of young and middle life, the majority of cases occurring before the fortieth year.'13 Chart I shows that 90 per cent of the cases were under forty. 'The spleen is uniform, smooth and painless.'12 The spleen was always smooth, and only rarely had there been any pain in the region of the spleen. The enlargement of the spleen 'may exist for years without any other symptom.'13 The average duration of splenic enlargement before the patient came to hospital was seven years.

And so it would be possible to go through the description of splenic anaemia in this or almost any recent text-book noting that the characteristic symptoms of Banti's disease are also met with in every case now under consideration. Even the existence of malaria is not sufficient to justify a diagnosis of malarial splenomegaly as opposed to Banti's disease, for Osler notes 'in a few of my cases malaria has been present,' and in a recent text-book on blood diseases we are told that 'a variety of conditions, such as malaria, has preceded it' (i.e., splenic anaemia).4

*Two cases of splenomedullary leucocythaemia were met with, but the features presented by both differed so greatly from those of the 104 cases hereinafter described that a further consideration of them would only tend to confuse the question under consideration.
Let us consider, then, the history of the illness and the various symptoms met with in the Swatow cases, noting, in each instance, whether the facts elucidated have any bearing on the differentiation of these cases from malarial cachexia, Banti's disease, and kala-azar.*

**Chart I.—Showing the age period during which the illness began (in 104 cases.)**

*History: Age at which the illness began.* This is shown in Chart I, from which it will be seen that practically half the cases were between sixteen and twenty-five years of age when they first became aware of a 'lump' in the position of the spleen. In kala-azar 50 per cent. of Rogers's cases were below twenty. It has already been pointed out that what Professor Osier says about the age at which splenic anaemia commences is in fullest accord with what was found in Swatow.

*Is it a family disease?* 'There is marked family tendency and heredity' in Banti's disease, which often 'has occurred in more than one member of the same family.' In kala-azar, 80 per cent. of the patients have at least one relative affected. In the Swatow cases 40 per cent.

*In dealing with the symptoms of the first two conditions reference will be made to text-books of general medicine and to those dealing especially with diseases of the blood, as well as to books on tropical medicine. In regard to kala-azar, many writers have quoted from, but few have been able to add anything to, the wonderful accumulation of relevant facts which is to be found in Leonard Rogers' 'Fevers in the Tropics.' The description he gives of kala-azar will be accepted as the standard.
told of relatives who were suffering from enlarged spleen, etc., but it was noted that this percentage varied with the district from which the patient came: e.g., eighteen patients were distributed over three districts and only three of these (i.e., 17 per cent.) had relatives affected, whereas of thirty-eight patients who came from one single district, in as many as twenty-four cases (i.e., 63 per cent.) at least one relative was affected. This suggests that if there are many cases of splenomegaly in a district it is to be expected that some of these will be amongst the relatives of the patients coming to hospital, whereas if only few cases exist in that region a smaller number of patients will have relatives who are affected. Perhaps there is little more than this in the 'family' incidence of kala-azar.

The duration of illness up to the time the patient came to hospital varied between a few months and (in one case only) thirty years. In 28 per cent. of the cases the illness had lasted for ten or more years. The course of Banti's disease is said to be 'extraordinarily chronic,' and a case is recorded in which, although splenomegaly had been discovered thirteen years previously, the patient still enjoyed fairly good health and was able to pursue his occupation daily. In malarial cachexia the majority of cases recover under treatment. In kala-azar, on the other hand, patients may be expected to die in about three years.

SYMPTOMS.

Coming, then, to a consideration of the symptoms from which the patient had suffered, we take up, in the first place:—

Fever. 88 per cent. of the patients remembered having had attacks of fever, and in two-thirds of these cases the form of infection was either simple or double tertian, the remainder being cases of quartan fever. It may cause surprise that as many as 12 per cent. failed to give a history of fever, but Sir Patrick Manson says that 'in highly malarious countries it is not unusual to see typical examples [of malarial cachexia] in which fever has never been a feature, or has been of so slight a character as not to have seriously attracted attention, or had occurred in childhood and been forgotten.' Banti's disease is 'generally' characterised by 'pyrexial attacks', and a history of fever and rigors is usually obtainable in kala-azar.

Oedema or Ascites had been present, or was found when the patients came to hospital, in 62 per cent. of the cases. One or other is a usual
symptom in kala-azar, ascites is present in some cases of Banti's disease.\textsuperscript{12,4} Oedema of the aukles is frequently present in malarial cachexia.\textsuperscript{12,7}

**Haemorrhage**—usually from the bowel or the nose—was recorded in 61 per cent. of the cases, and this also corresponds with the picture in Banti's disease, in which a tendency to haemorrhage is recognised by all,\textsuperscript{4,5,7,12} though Osler notes that in this condition the form of bleeding is 'usually haematemesis'—which has hardly ever been mentioned by the Swatow patients. In malarial cachexia 'haemorrhages of various kinds are apt to occur; epistaxis . . . haematemesis . . . melaena.'\textsuperscript{6} Haemorrhages are also of frequent occurrence in kala-azar.

**Diarrhoea** was recorded in 50 per cent. of the cases. In Banti's disease 'gastro-intestinal disturbance with sickness and diarrhoea'\textsuperscript{5,7} is often met with. In kala-azar, 30 per cent. of the cases give a history of diarrhoea, but in malarial cachexia the number is not so large as a rule.

**Physical signs.** These being the symptoms of which a history can be obtained what do we find on making an examination of the patient? Even a most casual glance at one of these cases generally shows that a distinct degree of anaemia is present—but this point will be dealt with in detail when the condition of the blood is considered. Another point that often impressed one on looking at the patients was their emaciated appearance; but on weighing and measuring them it was found that only one-fourth weighed much less (i.e., more than 10 per cent. less) than the calculated standard weights for their respective heights.\textsuperscript{*8} I can find no mention of emaciation in the description of Banti's disease: Rogers states that it is not always present in kala-azar, but adds that 'in malarial cachexia the wasting is much less marked than in . . . kala-azar.' When the abdomen is inspected the splenic enlargement is the most striking feature. The smallest spleens measured 13×11 cm. and 14×9 cm. while the largest were 53×23 cm. and 41×24 cm. The average length was 23½ cm. It is interesting to note that the spleen does not continue to increase in size during the whole course of the patient's illness, but that after a certain period a gradual diminution in size can be made out. Thus, while one patient with a small spleen

*The fact that the appearance of emaciation is not confirmed by weighing the patients may be explained, in some cases, by the obvious oedema or ascites, and in others by the probable occurrence of an (undetected) oedema of the viscera and deep tissues.
(13x11 cm.) had only been ill for three months, the very smallest spleen was met with in a man who had been ill for twenty years. By classifying the patients according to the duration of their illness one can obtain five classes each containing about twenty cases (Chart II).

A comparison of the average length of spleen in each of these classes shows that while in each successive class from one to six years' duration the average length of the spleen increases, yet after that period it becomes less again, evidence, doubtless, of a cirrhotic process succeeding the hypertrophy of the earlier years.

In malaria cachexia 'the spleen is gradually reduced in size', but no such change has been described in Banti's disease. In kala-azar, as 70 to 98 per cent. of the patients die before the fourth year, it is not unnatural that a diminution in the size of the spleen has not yet been recorded.

The Liver. The state of the liver usually varied with the duration of the disease. In only one quarter of the Swatow patients examined during the first two years of their illness was the liver enlarged, whereas in those who had been ill for a longer time, hepatic enlargement was present in as many as half the cases. On the other hand, it was found that of the patients who had been ill for fourteen
years or more, only one-third showed an enlarged liver—as shown in Chart III below.

**Chart III.**—Showing the relation between the duration of the illness and enlargement of the liver.

It will be noted that clinically the pathological processes in the spleen and in the liver run fairly parallel to one another, first of all gradual enlargement, reaching its acme between the fourth and sixth years, and then gradual contraction.

That the liver is affected in Banti’s disease is acknowledged by various authorities, while Leonard Rogers states that ‘the liver may also be enlarged in malarial cachexia, but does not so often reach the extreme degree of extension—as far as the level of the navel—as it does in kala-azar.’ Such a degree of hepatic enlargement was never met with in the Swatow cases.

**BLOOD EXAMINATION.**

Having dealt thus with the principal physical signs found on examining the patient, we are in a position to discuss the results of examining the blood.
The haemoglobin values* are given in the following table (Table I) which shows that in more than three-fourths of the cases the haemoglobin was between 50 and 70 per cent.†

**Table I.**—The percentage of haemoglobin.

<table>
<thead>
<tr>
<th>Haemoglobin value</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 %</td>
<td>3 cases</td>
</tr>
<tr>
<td>50 %</td>
<td>20 cases</td>
</tr>
<tr>
<td>60 %</td>
<td>19 cases</td>
</tr>
<tr>
<td>70 %</td>
<td>32 cases</td>
</tr>
<tr>
<td>80 %</td>
<td>17 cases</td>
</tr>
</tbody>
</table>

In Banti's disease,² kala-azar, and malarial cachexia,¹⁰ the haemoglobin is reduced.

The erythrocytes varied in number from 2½ to 4 millions per cubic millimetre in more than half the cases. The majority of the remaining cases showed between four and five millions, though a few (11 per cent.) had less than two and a half millions. In Banti's disease there seems to be a consensus of opinion⁴ ⁵ that from two and a half to three million red cells is the number usually met with, though ' it may fall as low as two million.'¹² In kala-azar, too, there is a considerable reduction in the number of red cells, although at first the degree of anaemia is not so great as that met with in malarial cachexia; 54 per cent of Rogers's cases of kala-azar gave from two and a half million to four million per c.mm.¹⁰

The colour index varied in different cases from 0.6 to 1.3, but in two-thirds of the cases it did not exceed 0.9, which agrees with the condition met with in Banti's disease, where 'the rule is a colour index below unity.'⁵ In malarial cachexia an index of less than one is also to be expected,¹⁰ ¹² whereas in kala-azar the colour index is normal.¹⁰

Whether normoblasts were or were not present seemed to depend mainly on the degree of reduction of the total number of red cells. Thus nucleated red cells were found in one-half the cases whose total red count was less than two and a half million, and in only 6 per cent.

*The percentage of haemoglobin was estimated with Talquist's apparatus, which is the simplest; if the tests are carefully carried out the results are sufficiently accurate for comparative purposes.

†In considering the degree of anaemia shown by these figures it should be borne in mind that both Captain McCay⁹ and Leonard Rogers (loc. cit.) have come to the conclusion that the 100 per cent. standard of haemoglobin is rarely if ever reached by the vegetarian native of India. Similarly one has failed to find a Chinese with more than 95 per cent. haemoglobin, the average of recent observations on healthy natives of Swatow being only 90 per cent.
of the cases with more than four million cells. In the intermediate group normoblasts were found in 30 per cent. of the cases. Normoblasts may be found in a majority of cases of Banti’s disease, but their presence in kala-azar is rare.

Poikilocytes were noted in 27 per cent. of the cases examined. It is on record that they are sometimes present in splenic anaemia, though only rarely in kala-azar. I have found no record as to their presence or absence in cases of malarial cachexia.

**Leucocytes.** The following table shows the result of an enumeration of the leucocytes in each case:

<table>
<thead>
<tr>
<th>Number of cells</th>
<th>Percentage of cases at each figure.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Swatow patients.</td>
</tr>
<tr>
<td>500—1000</td>
<td>4 %</td>
</tr>
<tr>
<td>1001—1500</td>
<td>10 %</td>
</tr>
<tr>
<td>1501—2000</td>
<td>26 %</td>
</tr>
<tr>
<td>2001—2500</td>
<td>16 %</td>
</tr>
<tr>
<td>2501—3000</td>
<td>10 %</td>
</tr>
<tr>
<td>3001—3500</td>
<td>9 %</td>
</tr>
<tr>
<td>3501—4000</td>
<td>6 %</td>
</tr>
<tr>
<td>4001—4500</td>
<td>4 %</td>
</tr>
<tr>
<td>4501—5000</td>
<td>2 %</td>
</tr>
<tr>
<td>5001—5500</td>
<td>3 %</td>
</tr>
<tr>
<td>5501—6000</td>
<td>3 %</td>
</tr>
<tr>
<td>6001—6500</td>
<td>3 %</td>
</tr>
</tbody>
</table>

Two-thirds of the cases have less than 3,000 white cells. This fact shows how much these different diseases—splenic anaemia, malarial cachexia, and kala-azar—have in common, for not only is leucopenia present in all of them, but it is one of the most important diagnostic signs. ‘The association of an enlarged spleen with leucopenia is almost alone sufficiently diagnostic’ of splenic anaemia (Fleming), but it is equally characteristic of the other conditions.

We come next to a point on which Leonard Rogers has laid some stress in differentiating malaria and kala-azar. ‘The ratio of the white to the red corpuscles will generally allow of their [i.e., these two diseases] being readily distinguished, for in malaria they are reduced in about equal proportions, while in uncomplicated kala-azar the white are reduced at least twice as much as the red, so that the proportion of white to red is less than 1 to 1,500, and commonly much lower.’

The following table (Table III) shows the ratio between the white and the red cells in the Swatow splenomegalies, and also in Leonard Rogers’s kala-azar cases:
A glance at the table reveals the fact that the Swatow cases do not correspond exactly with either of the groups described by Rogers. On the one hand they do not show the normal ratio of white to red cells—which he affirms is present in malaria—and on the other hand more than half of them do not show the ratio of less than 1 to 1,500 which was present in over two-thirds of his kala-azar cases, and is, he affirms, characteristic of this condition. This important point will be referred to again later on.

The results of the differential count of the white cells (based on an examination of 300 cells) is shown in the following tables (Tables IV, V, VI, and VII):

**Table IV.—Percentage of polymorphonuclear cells met with in the Swatow patients.**

<table>
<thead>
<tr>
<th>Percentage of polymorphonuclear cells</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>35.1—40%</td>
<td>5 cases</td>
</tr>
<tr>
<td>40.1—45%</td>
<td>6 cases</td>
</tr>
<tr>
<td>45.1—50%</td>
<td>11 cases</td>
</tr>
<tr>
<td>50.1—55%</td>
<td>20 cases</td>
</tr>
<tr>
<td>55.1—60%</td>
<td>15 cases</td>
</tr>
<tr>
<td>60.1—65%</td>
<td>17 cases</td>
</tr>
<tr>
<td>65.1—70%</td>
<td>16 cases</td>
</tr>
<tr>
<td>70.1—75%</td>
<td>10 cases</td>
</tr>
<tr>
<td>75.1—80%</td>
<td>1 case</td>
</tr>
</tbody>
</table>

**Table V.—Number of polymorphonuclear cells per c.mm.**

<table>
<thead>
<tr>
<th>Number of cells</th>
<th>Percentage of cases at each figure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Swatow patients</td>
</tr>
<tr>
<td>0—250</td>
<td>—</td>
</tr>
<tr>
<td>251—500</td>
<td>2%</td>
</tr>
<tr>
<td>501—1000</td>
<td>18%</td>
</tr>
<tr>
<td>1001—2000</td>
<td>54%</td>
</tr>
<tr>
<td>2001—3000</td>
<td>23%</td>
</tr>
<tr>
<td>3001—4000</td>
<td>4%</td>
</tr>
</tbody>
</table>
Splenomegaly in South China.

Table VI.—Percentage of large mononuclear cells.

<table>
<thead>
<tr>
<th>Percentage of large mononuclears</th>
<th>Percentage of cases at each figure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Swatow patients</td>
</tr>
<tr>
<td>0—8 %</td>
<td>35 %</td>
</tr>
<tr>
<td>8.1—12 %</td>
<td>43 %</td>
</tr>
<tr>
<td>12.1—15 %</td>
<td>13 %</td>
</tr>
<tr>
<td>15 % upward</td>
<td>9 %</td>
</tr>
</tbody>
</table>

Table VII.—Percentage of small mononuclear cells (lymphocytes) met with in Swatow patients.

<table>
<thead>
<tr>
<th>Percentage of small mononuclears</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>5—10 %</td>
<td>1 case</td>
</tr>
<tr>
<td>10.1—15 %</td>
<td>4 cases</td>
</tr>
<tr>
<td>15.1—20 %</td>
<td>13 cases</td>
</tr>
<tr>
<td>20.1—25 %</td>
<td>28 cases</td>
</tr>
<tr>
<td>25.1—30 %</td>
<td>16 cases</td>
</tr>
<tr>
<td>30.1—35 %</td>
<td>15 cases</td>
</tr>
<tr>
<td>35.1—40 %</td>
<td>18 cases</td>
</tr>
<tr>
<td>40.1—45 %</td>
<td>8 cases</td>
</tr>
<tr>
<td>45.1—50 %</td>
<td>2 cases</td>
</tr>
<tr>
<td>50.1—55 %</td>
<td>1 case</td>
</tr>
</tbody>
</table>

How do the facts shown in these tables compare with the blood-counts found in the different diseases we have been considering? In Banti's disease there appears to be "no constancy in the differential count." Some authorities find that "there are no special changes in the differential count," at any rate before the third stage, but others believe that "a relative increase of lymphocytes is common with a corresponding relative decrease in the polymorphonuclear neutrophiles." In malaria and kala-azar, on the other hand, the differential counts are quite definite: "leucopenia, with a high percentage of lymphocytes, especially the larger forms," is acknowledged by all authorities to-day as characteristic of both. Rogers states, further, that the determination of a high percentage of large mononuclear cells "is of very little value in the diagnosis of malaria" in those tropical countries in which kala-azar exists.

If Tables IV to VII are considered in the light of these quotations, what deductions is one to draw as to the nature of the splenomegalies met with in Swatow? It seems that one is compelled to exclude kala-azar, for although in most of the cases the mononuclear cells are more numerous than usual (Table VI), yet they are certainly not as much.

*And yet in 1904 Cabot was able to state that "In post-malarial anaemia Billings, Thayer, and Da Costa have found quite marked leucocytosis."
increased as in Leonard Rogers's kala-azar cases.* Further, although the polymorphonuclear cells are definitely diminished in number, usually a smaller percentage than normal (Table IV), and always a smaller number per cubic millimetre (Table V), yet there is not so great a reduction as in kala-azar—in which 77 per cent. of the cases have less than 1,000 polymorphonuclear leucocytes per cubic millimetre. This view—that kala-azar is not the cause of the Swatow splenomegalies—is confirmed by a consideration of many of the facts brought out in this paper, especially the ratio of red cells to white cells, and the very different prognosis in these two conditions. It finds further support in Dr. Cochran's report that "the numerous cases [giving typical kala-azar symptoms] reported from ... Swatow ... if interpreted in the light of the negative examinations reported in similar cases in the neighbourhood, would seem not to be kala-azar." The blood-counts in Dr. Cochran's cases of kala-azar in China are given in Table VIII below.

**Table VIII.**—Showing the results of blood examination in various cases of enlarged spleen.

<table>
<thead>
<tr>
<th>Country</th>
<th>Cases of Kala-azar</th>
<th>Other Splenomegalies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>India</td>
<td>South America</td>
</tr>
<tr>
<td></td>
<td>Rogers</td>
<td>Migone</td>
</tr>
<tr>
<td></td>
<td>Cochrans</td>
<td>Whyte</td>
</tr>
<tr>
<td></td>
<td>80</td>
<td>1</td>
</tr>
<tr>
<td>Erythrocytes</td>
<td>21.4 million</td>
<td>3,900,000</td>
</tr>
<tr>
<td>Leucocytes</td>
<td>700–2000</td>
<td>3400</td>
</tr>
<tr>
<td>Ratio of white to red cells</td>
<td>Less than 1:1500</td>
<td>1:1147</td>
</tr>
<tr>
<td>Polymorphonuclears</td>
<td>49 %</td>
<td>47.5 %</td>
</tr>
<tr>
<td>Polymorphonuclears per c.mm.</td>
<td>Less than 2000</td>
<td>1666</td>
</tr>
<tr>
<td>Mononuclears, including lymphocytes</td>
<td>60–80 %</td>
<td>46 %</td>
</tr>
</tbody>
</table>

* It must be borne in mind that various observers do not agree with Leonard Rogers in attaching such great importance to the blood picture. Thus Dr. Cannata in describing 56 cases of kala-azar (Mediterranean form), reports that in 40 per cent. there was a complete absence of leucopenia, and one-fourth of these showed a certain degree of leucocytosis. Note also the reports from China and South America on the blood-count in Kala-azar (Table VIII).
Splenomegaly in South China.

Although many of the symptoms shown by the Swatow patients resemble those of Egyptian splenomegaly—'moderate anaemia with more or less wasting,' 'slight fever of an irregular type,' hepatic cirrhosis and occasionally haematemesis—yet the almost constant occurrence of marked ascites in the Egyptian cases (as compared with its infrequency among the Swatow patients), and the difference between the blood-picture shown by the Egyptian and the Swatow patients (Table VIII above), warrant the belief that the two diseases own a different causation.

On the other hand, there is no positive evidence to show that the Swatow patients differ from the cases which occur in the Canal Zone, and are characterized by 'splenomegaly, irregular pyrexia, leukopenia, anaemia, emaciation, and chronicity.' This condition has been differentiated from kala-azar by the absence of the Leishman-Donovan body, and the presence of a small encapsulated micro-organism which Darling has named the Histoplasma capsulatum. Neither of these bodies has been found in the peripheral blood of the Swatow patients, and in no case has either the liver or the spleen been punctured in the search for causal organisms.

Rolleston, in differentiating Banti's disease from chronic splenic anaemia, states that the latter condition presents the following characters: (i) Chronic splenomegaly, which cannot be correlated with any recognised cause; (ii) absence of enlargement of the lymphatic glands; (iii) chlorotic anaemia, namely, with a low colour index; (iv) absence of leucocytosis, and usually the presence of leucopenia; (v) liability to copious gastro-intestinal haemorrhages from time to time; (vi) the prolonged course without any tendency to spontaneous cure.

This list shows that it is impossible to be sure that any particular one of the Swatow patients was not a case of splenic anaemia, but as this is a rare condition, and as no one has yet described the occurrence of splenic anaemia in endemic form, one cannot believe that that is the proper diagnosis for the majority of these cases.

CONCLUSIONS.

1. That, in spite of a careful consideration of the symptoms and an examination of the blood, it is impossible to say whether the Swatow patients were suffering from malarial cachexia, histoplasmosis, or some hitherto undescribed condition.

* Only ten cases of splenic anaemia and Banti's disease were examined in the pathological department of the London Hospital during the years 1907 to 1913.
2. That one or more cases of splenic anaemia may have been included in the 104 Swatow splenomegalies, because the clinical differentiation of these two conditions is impossible.*

3. That if the cases which have been described are malarial cachexia, then some of the signs which have been found useful in India in differentiating malarial cachexia from kala-azar—e.g., the ratio of the leucocytes to the haemocytes—do not apply to patients in South China.

4. That 'experience is fallacious and judgment difficult.'

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* The difficulty of diagnosing Banti’s disease is shown not only in the findings of this paper, but still more prominently in the Transactions of the Royal Society of Medicine, where it is on record that four cases of splenic anaemia were described which some of the more experienced gentlemen in the audience believed to be cases of haemolytic icterus, and not splenic anaemia at all. To discover whether haemolytic icterus was the cause of the Swatow splenomegalies, samples of blood from a selection of these patients were diluted with sodium chloride solutions varying in strength from 0.1 per cent. to 0.9. As none of the cases tested showed undue fragility of the red cells, haemolytic icterus could be definitely excluded.
Splenectomy in Kala-azar (Preliminary Report). 

SPLENECTOMY IN KALA-AZAR (Preliminary Report)*

SAMUEL COCHRAN, M.D., Hwaiyuen.

In 1911, Makkas of Athens, reported a case of Kala-azar treated by splenectomy with results that were for about three weeks distinctly favorable, there being an increase in hemoglobin and red-cells and the fever subsiding. Unfortunately, the progress of the case was cut short by an intercurrent pneumonia. Encouraged by this case, he examined the spleens in the museum and found one that had been removed from a case of "Banti's Disease" which contained Leishmania. On looking up the patient, who had been operated upon in March 1910, he found that more than a year later he was in perfect health.

I have been able to find the published record of only one other case, that of Alvares in Lisbon, in which splenectomy has been done for Leishmaniasis and in this one the removal of the spleen seems not to have influenced the disease favorably. 2

Besides these cases I know, by personal communication, of one other case, in which splenectomy was performed without a diagnosis of Kala-azar having been made. Leishmania were found in the excised spleen. The patient came through the operation well, but died several weeks later of general inanition.

An examination of the available literature on Kala-azar, including a file of the *Kala-azar Bulletin*, the *Tropical Diseases Bulletin*, and several of the better known works on Tropical Diseases in their recent editions, fails to show that anyone, except Makkas and Alvares, has ever considered splenectomy as a method of treatment. The reason for this is obvious. As the parasitic cause of the disease is distributed in almost every tissue and organ in the body including the blood, splenectomy, considered merely as a means of removing infectious tissue, has very logically been rejected.

There is a point of view, however, that might lead us to expect a possible benefit to the patient from the operation. It is conceivable that the anemia and leucopenia are, in part at least, caused by the enlarged and hyperactive spleen, and that certain of the other symptoms, such as the emaciation, debility and tendency to hemorrhage, may be due to the anemia. If this be the case, it is not impossible that the removal of the spleen might considerably improve the patient's general condition and so enable him to combat the infection with a greater

* A paper read at a meeting of the Kuling Medical Association, August 3rd, 1915.
chance of success. An encouragement to attempt splenectomy is found in the fact that certain blood diseases are beneficially influenced by it, especially one that clinically very closely resembles Kala-azar, viz., Banti’s Disease.

Moved by these considerations, and especially by Maxwell’s report of successful results in a disease quite similar to Leishmaniasis, I have recently removed the spleens from three patients suffering from Kala-azar. The earliest of these operations was performed only four months ago. It is, therefore, too soon, and the cases are too few, for us to draw any conclusions as to the final results; but the effects of the operation have been sufficiently interesting to make it worth while to report them.

The tendency of Kala-azar cases to bleeding, which may be persistent, determined me to forestall hemorrhage as far as possible by a preliminary transfusion of healthy blood. The donor’s and the patient’s blood were examined in each case for mutual hemolysis and agglutination, and the transfusion was performed by drawing the blood through a paraffined cannula into a paraffined graduate glass containing enough sterile 3% sodium citrate solution to make the total amount of citrate in the transfused blood equal 3%. This prevents clotting and the blood can then be given intravenously at one’s leisure in the same manner as salvarsan.

As to the technic of the operation I have followed, in the main, the suggestions given in Maxwell’s excellent discussion of splenectomy in the March number of the *China Medical Journal*. Fortunately, these cases have presented no unusual difficulty and all of them left the table in surprisingly good condition, considering the serious nature of the disease and the poor condition of the patients.

The following are the case records:—

**Case I.**

*History.*—Admitted March 19th, 1915. Male, aged 20. Has been ill for two years with enlarged spleen. He applies for treatment because of the splenic tumor and general weakness. He knows of two other cases in his village, cousins of his, and both of them were fatal. His general condition is fairly good. Hemoglobin 45%. Leucocytes 2030. The spleen extends just to the right of the navel, and measures 13 cm. in breadth from the costal border and 17 cm. in length. The liver is freely palpable and measures 13 cm. from its upper limit of dullness in the fourth interspace to its free edge, three fingers breadth below the ribs. Leishmania are found in an excised lymph node. The patient
was kept under observation for three weeks, during which time he ran an irregular temperature varying from normal to 102.5°.

On the morning of April 9th he received, intravenously, 50 cc. of his brother-in-law's blood and in the afternoon his spleen was removed. The tail of the pancreas lay against the hilum of the spleen and was wounded by forceps during the operation. The wound was accordingly drained by gauze reaching down to the injured pancreas. The spleen weighed 1,360 gms. and smears from it contained enormous numbers of Leishmania, as did also smears made from a spleen puncture just before the operation. For two days following the operation he was in a critical condition with distended abdomen and rapid pulse. The distension was in part due to a dilated stomach and was relieved by lavage. Beginning with the third day he improved rapidly. On April 19th, and again on the 25th, there was a copious sero-purulent discharge from the drainage area, and it is quite possible that if the wounded

CASE I. Chart of Weight, Hemoglobin %, and Leucocyte count.
pancreas had not been drained he would have succumbed. From then on the wound healed well, but on July 10th, there is still a slight sinus.

Temperature.—Following the operation the patient had considerable fever for twelve days, reaching 104°F several times. From June 22nd on the temperature greatly improved, being near the normal most of the time, but there were several attacks of fever lasting two or three days each, the highest record being 102°F.

Liver. By May 17th, his liver was not palpable nor percussible below the costal border, and its upper limit of dulness was in the fifth space. Its breadth as percussed was 7 cm. as against 13 cm. on admission.

By May 1st, his general condition was manifestly improved, his appetite was good and he was convinced that he was on the road to recovery.

The observations on his hemoglobin, the white cell counts, and his weight are recorded on the accompanying chart.

Parasites. On June 5th, an excised lymph node showed Leishmania in the same numbers as before operation. On July 3rd, a liver puncture showed large numbers of Leishmania. On July 5th, salvarsan (.4 gm.), was given intravenously. On the 7th, liver puncture was done again, and parasites were easily found.*

CASE II.

History.—Admitted May 5th, 1915. Male, aged 10. Has been ill for two years with splenic enlargement, and an irregular fever which has been constantly present for the last six months. He has had cancrum oris which healed, leaving a deficiency resembling hare-lip. The spleen reaches well to the right of the navel, its edge being 21 cm. from the costal border and its other diameter measuring 16 cm. The liver is not enlarged. His hemoglobin is 33%, white cells 1,600. Leishmania were found in an excised lymph node. Previous to operation he was treated for Hookworm. While in the ward before operation he ran an irregular temperature, the daily maximum varying from 99.5 to 102.5.

Operation.—On May 22nd, after a transfusion of 60 cc. of his grandmother's blood, splenectomy was done, the spleen weighing 1600 gms. Spleen puncture and smears showed Leishmania in enormous numbers. After two days in a critical condition he improved rapidly, the wound

* Since writing the above the patient has had a set-back with fever and loss of appetite. He is however in much better condition than before the operation.
healing by primary union. Following the operation the temperature fell to normal in a day or so, and has been nearly normal ever since with the exception of two or three brief rises, lasting a day or so each.

The weight, hemoglobin, and leucocyte observations will be seen from the accompanying chart. No deduction has been made for the spleen in the weight curve it being included in the ante-operation weight.

Since the operation the patient has made steady progress in every respect as regards his general health.

On July 5th, liver puncture showed a few Leishmania, none of them young forms.

**CASE III.**

*History.*—Admitted Feb. 24th, 1915. Male, 22 years old. Ill for eight months with enlarged spleen following a short attack of fever. Spleen measures 13 cm. horizontally and 11 cm. vertically. The liver is
palpable 4 cm. below the ribs, and is 13 cm. in vertical measurement from the upper limit of dulness. Hemoglobin is 52%, white cells 3200.

After a day or two in hospital he developed a necrotic condition of the lower lip and returned home. He came back to the hospital three times, making short visits in April and May, during one of which he was treated for Hookworm. At each of the first two visits the necrosis recurred causing postponement of the operation. In June he came back with the cancrum oris checked but with the entire lower lip destroyed. By this time the spleen measured 22 cm. x 17 cm. and extended beyond the navel. Hemoglobin 50% and leucocytes 1950. Abundant Leishmania found in lymph node smears.

Considering the patient's general condition, and especially in view of the low vitality of the tissues as shown by the cancrum oris, the case was not a favorable one for operation. He pleaded, however, so earnestly for splenectomy, urging that it was his only chance for life,
that I decided to attempt it. The operation was performed on June 15th, after transfusion of 300 cc. of his father's blood. The spleen weighed 2350 gms. The patient reacted well from the operation and his hemoglobin rose to 82% by the 18th. On the 20th he developed a diarrhoea and from then on failed steadily, apparently absorbing nothing from his alimentary tract. He died on July 2nd, in an extreme state of emaciation. It will be seen that the few blood examinations made after the operation showed the same rise in hemoglobin and in the white-cell count as do the other cases.

**Summary.** Following the operation all three cases showed an immediate and marked increase in hemoglobin and the leucopenia was abolished, there being a tendency to a moderate leucocytosis. One case survived only seventeen days. The other two are now (July 10th) in considerably better health than before the operation. In one of them the liver has shrunk to normal size from a previous marked hypertrophy. Both have added weight. The temperature curve in both is more nearly normal than before the operation. Parasites are still easily found, though in one of the cases the number seems smaller.


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**A CONTINUED FEVER OF KOREA.**


Last year, in a paper read before the annual meeting of the Korea Medical Missionary Association, I endeavoured to analyze a number of cases of fever which I had had in hospital during the year. Some of them proved to be relapsing fever, some it was impossible for me to place, but I was left with a group of seven cases which appeared to be a definite disease, at least judging by the similarity of course and symptoms, though my notes were so incomplete that the picture I was able to present was very sketchy. This year I have had eight more cases of exactly the same kind, and in some of them I was able at the beginning of the case to express the

* A paper read at the Biennial Conference of the C.M.M.A., held in Shanghai, February, 1915.
opinion that the course would be what it ultimately turned out, so that I feel I ought not to delay placing on record the facts in hand, that they may be available for comparison by others should they encounter similar cases of fever.

My records are still far from being what they should be, but this year's cases have been noted with more care than last.

There is practically no evidence as to whether or not this disease is infectious beyond the fact that it is a fever of the type which is generally associated with infection. One patient began his illness in the hospital, having come in for the cure of a hernia; there were other cases in hospital at the time and it may be he took the disease from one of them, if so the incubation period must be short.

Season. The cases seem to be confined to the spring and early summer. The time of onset of my fifteen cases was as follows:

<table>
<thead>
<tr>
<th>Month</th>
<th>1913</th>
<th>1914</th>
<th>Total</th>
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<tbody>
<tr>
<td>March</td>
<td>...</td>
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<td>2</td>
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<td>April</td>
<td>...</td>
<td>...</td>
<td>2</td>
</tr>
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<td>May</td>
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<td>4</td>
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<td>June</td>
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Onset. The onset is generally sudden; in one case it appears to have been gradual, but all questions of history must be taken with caution when a feverish patient has to tell his own story. Shivering is recorded in eight cases and its absence in one, while there is no definite note in the other six, in which however it probably occurred. Ten cases are noted as beginning with "pains all over," and in five of these headache is also mentioned; only three cases mention headache, one of them also complaining of a pain in the chest, and one of them of abdominal trouble; one began with a bad throat, and in one case there is no note of the onset. Two patients complained of deafness and one of pains in the ear; six of cough, which is noted as not having occurred in three others; one of vomiting, and two of slight epistaxis. In one case there were drenching sweats frequently.

Temperature. The temperature chart is most characteristic and it is through this that the disease was isolated. A high continual fever of about ten days is followed by a gradual fall lasting about six more. The total period of the disease is thus much the same as that of typhus, which in other ways it also resembles, but the termination is by a quite definite lysis instead of by crisis. A very good chart is shown herewith of a case which followed an almost ideal course. Assuming that the dates elicited from the patients are correct the details of the length of fever are as follows:—the height of the fever lasted until the 6th day in one case, the 8th day in one case, the 9th day in six cases, the
10th day in four cases, the 12th day in two cases and the 16th day in one case. The fever was ended by the 12th day in one case, the 13th day in four cases, the 14th day in five cases, the 16th day in three cases, the 17th day in one case, and the 20th day in one case. The time occupied by the lysis was:—four days in two cases, five days in five cases, six days in five cases, seven days in one case, and eight days in two cases.

In character the fever has a good deal of variety. The average temperature during the height is generally $103^\circ F.-104^\circ F.$ In one case the oscillations were round $102^\circ F.$, in one case round $102.5^\circ F.$, in three cases round $103^\circ F.$, in five cases round $103.5^\circ F.$, and five cases round $104^\circ F.$ The highest maximum recorded was $106.2^\circ F.$ and the lowest $103.6^\circ F.$; generally it was between $104^\circ F.$ and $105^\circ F.$ In six cases the oscillations were about one degree, in five cases from one to two degrees, in one case from one to three degrees, and in one case lysis commenced on the day of admission. Three of the cases were irregular, the oscillations varying a good deal from the type; in one case there was a peculiar extra rise on each of two alternate days. One case (Chart II), after some wide oscillations, became steady, and in two cases there was a fall almost to normal followed by a resumption of the regular course. One of these was the longest case, in which the lysis did not begin till the 16th day, ending on the 20th, the fall occurring from the 10th to the 12th day; in the

Chart I. Showing usual course of temperature.
other case it was from the 3rd to the 4th. A comparison of the two charts shown will easily bring out the probability of both being one disease in spite of the departure from type shown by Chart II.

The method of lysis was frequently irregular, especially in the cases taking the longest and shortest periods. In no two cases was it quite the same, but in general it was a fall in steps like the end of a case of typhoid. The steps were usually one degree more down than up, and there was a tendency for the type to be that shown in Chart I. i.e. a morning temperature very slightly lower than before, followed by an evening temperature nearly down to the previous base line, and followed the next morning by a more definite drop. The cases with regular steps were:—lasting five days, four cases; two degrees down and one up in two cases; three degrees down and two up in one case; two degrees down and one-half degree up in one case. Lasting six days, two cases:—three degrees down and two up in one case, and one to three degrees down and 0.2 degree up in one case.

In one case there was a further rise of temperature, unaccompanied by other symptoms, on the 5th and 6th days after lysis was complete.

**Pulse.** A very strange feature of this series of cases is the difference between the pulse rates observed in the seven cases of 1913 and the eight of 1914. Taking the pulse rate before lysis began, in 1913 the lowest recorded was 104 and the highest 136, while the corresponding figures for 1914 were 84 and 124. The detailed variations
followed the movements of the temperature, but while the rate may be
taken to correspond pretty well with the fever in the 1913 cases, it is as
a rule distinctly below what would be expected in those of 1914. It is
just possible that this may be a result of treatment as the patients of
1914 presented themselves at an earlier stage of their disease than those
of 1913, some of them coming almost at the beginning of the illness.

Generally the pulse was full and strong in character, frequently
bounding, but in two cases it was noted to be of a dicrotic character,
and in one case it definitely intermitted.

Chest. It has already been mentioned that cough formed a symptom
of the onset in six cases. Taking the disease as a whole it is recorded
that there was slight cough in nine cases, of these one also had rales in
the chest, in one there was congestion of the bases of the lungs at a late
stage, and in three it is noted that there were no signs to account for the
cough; in two cases the presence of rales is noted although there was
no complaint of cough; in two, there was no cough and no signs in the
chest; in one, no cough but weakness of breath sounds in the axilla;
and in one there is no note as to the chest.

Spleen. There is no note as to the state of the spleen in three
cases; in five it is recorded that it was not felt, in two it was just
palpable, in three large and hard, and in two large and soft. As chronic
enlargement of the spleen is very rare in Korea, if it exists at all, we
must probably consider that some increase of this organ is the rule in
this disease, though it cannot be regarded as a diagnostic character.

Tongue. The tongue is generally furred, but it seems to be only
what may be expected with any pyrexia and not to take any peculiar
form of a characteristic kind. In one case there is no note, in seven
cases there was simply a thin fur, in one case a thick white and in one
case a thick brown fur, in one case the tongue was red and dry, in
one brown and dry, in two the fur was slightly streaky, and in one it
was typically that found in typhoid.

Bowels. The bowels were generally rather constipated, and aperients
were given in thirteen cases. In one case only, did the bowels act
normally. Two patients, the most seriously ill of all, had some
diarrhoea at a late stage accompanied by incontinence, but only one of
them had it at all severely and it had been necessary to give him
enemata for some days before (Chart II).

Rash. A rash seems to be an integral part of the disease; its
presence was noted in twelve cases, in two there is no note, and in one
no rash could be found. In all the twelve cases the rash was present
on admission, the date of the disease varying from the 5th to the 10th. In the earlier cases it tended to approximate in character to a typhoid rash but the later ones showed staining and this appeared afterwards in some others. In six of the cases it was very copious, the trunk being thickly covered with spots, and in one case it was so typical of typhus that it was notified as such, lysis beginning the next day. The most striking rash was very diffuse all over the chest and abdomen; it consisted of small red papules, rather brick red than rose colour, small and irregular in shape, slightly raised, but with a sharp edge instead of being lenticular, very nearly fading at first but showing some definite staining in the later stages. This almost approximates to the rash of typhus, but the spots are smaller and never seem to become so haemorrhagic.

Taking the cases in detail, in three, only typhoid rose-spots were found, which appeared in crops from the 6th day (admission) to the 8th day. In two cases, on the day of admission (5th) a few spots were present that might pass for those of typhoid, but were not characteristic. One case began on admission (6th day) with typhoid spots which later showed definite staining. The other six cases all had a copious rash. Two of them had typhoid spots among many others, and in one of these it is noted that they stained later; one had a similar rash staining but without any marked rose spots; one was similar but more like typhus; one was typical of typhus, and one was very indefinite though profuse.

Epistaxis. This symptom, like enlargement of the spleen, seems to be uncertain. In no case observed was it profuse. There is no note in six cases, in four there is a note that there had been no epistaxis, and in five it was present; of these, two gave a history of some bleeding at the onset; two denied having had any, but had slight attacks later, one on the 7th day, and one on the 8th and 11th; one case had it on the 3rd day and again on the 9th.

Blood. No blood examination was made in 1913, but in 1914 a film was made and inspected in each of the eight cases and further examined in seven of them. In all the eight it was noted that the spirillae of relapsing fever were not found. In four cases a white cell count was made, and in one other it was considered that the whites were scanty. The results of the counts were:—2,000, 17,000, 8,000, and 10,800. It is interesting to notice that the first two of these were in at the same time, the first being exceedingly ill and the second very slightly so. So few differential counts have been done that the results here presented may not be very reliable:
A Continued Fever of Korea.

I am not prepared to try to draw any conclusions, but wish to put these counts on record to compare with what others will do in future.

**Abdomen.** Definite abdominal symptoms were conspicuous by their absence. In three cases there was some vomiting, which occurred in one of them at the beginning and two while under observation. In two there was hiccough, one of them also having tympanites and when that was relieved a good deal of diarrhoea with incontinence. These were the only signs of abdominal disturbance noticed in any of the cases.

**General Condition.** The patients were usually quiet, dull, and heavy, rather in a simple febrile state than anything more. As a rule they lay on the back and moved very little, taking no interest in anything that went on and apparently not remembering what happened. The eyes were often suffused, in five cases quite markedly so, slightly in four others, while there is no record in five cases, and in only one is it noted that they were normal. In two cases deafness was complained of. Two, who were very ill and weak, became mildly delirious, wandering in a low, muttering delirium, but in neither case incapable of being roused or at all noisy. As soon as the temperature began to fall there was a marked improvement in the mental condition, the patients becoming brighter and more comfortable, though in the two cases just referred to the great weakness gave rise to some anxiety. These were the only cases which did not have a perfectly straightforward illness, and they were the ones which had diarrhoea. After the temperature was down it generally went below normal for a while, but in spite of this the patient was feeling well and eating heartily, convalescence being so short and rapid that, with the exception of the same two patients, all were quite well and out of hospital in a few days.

**Differential Diagnosis.** This disease resembles both typhoid and typhus fevers in many points, but seems to be quite distinct from either. The onset is sudden, unlike typhoid as a rule, and though the rest of the chart follows a typhoid course, it is far too short for that disease. The almost entire absence of abdominal symptoms and, so far as these cases go, of the typical complications, also serve to mark it off; neither enlargement of the spleen nor epistaxis is as common, and though the chest is often affected the rales characteristic of typhoid have not been heard. From typhus the great distinction is the termination by lysis instead of by crisis, but the disease also differs in its mildness, no certain
infectivity, low mortality (perhaps none), and quiet mental state. The most serious case (Chart II) was in many ways very like typhus, almost every symptom of that disease being present but in a very mild form, the only exception being that the rash was profuse and very well marked, a serious sign in typhus; the mental state at the end of the second week was what might have been expected before the end of the first week of typhus, and other symptoms, including congestion of the bases of the lungs, similarly slight. One very striking point of likeness was that lysis began with a sudden fall of temperature accompanied by diarrhoea, as is common at the crisis in typhus, but the temperature rose again, repeating the fall and rise the next day and then continuing to come down by lysis. The rash has much in common with both the other fevers, typical typhoid spots are often present, but they tend to stain later and are often accompanied by others, diffuse, irregular, and staining, though the typical haemorrhagic spots of typhus have not been seen. Its character seems to be intermediate between the two and is possibly almost diagnostic at times.

As the disease seems to approach most nearly to typhus, but to differ from it distinctly in its termination and in its severity, I venture to suggest the name "paratyphus" on the analogy of "paratyphoid," until some better one can be found. I believe that this name is used by the Japanese where we use paratyphoid, as they follow the continental method and speak of abdominal and eruptive typhus instead of typhoid and typhus, but unless we give in to them in the first point of nomenclature there is no reason why we should decline to make the distinction in the milder diseases.

_Treatment._ When nothing is known of the pathology of a disease the only possible treatment is symptomatic, and practically all that I have done has been on these lines. The bowels have been attended to, generally by six grains of calomel on admission, and later by enemata when necessary. Most patients have had a mild tonic mixture containing strychnine and nitrohydrochloric acid. If the pulse was rapid or showed any signs of weakness brandy was given, generally one ounce per diem in four doses. In four cases, where the likeness to typhoid was most marked, small regular doses of calomel combined with salol were given for periods varying from one to seven days. The only point of interest is the absence of any definite effect from the use of quinine. This was given in six cases, on account of some similarity to influenza in the symptoms. In one of these it was not given for some days and the lysis began from the date of exhibition; in four cases it was given throughout without any effect that could be seen; and in the worst
case, which was seen early, it was given for a few days with the idea that malaria might be present. The first doses seemed to have some effect but it did not last at all. Most of the patients have been able to eat well throughout.

**SUMMARY.**

1. There seems to be a definite febrile disease occurring in the spring and early summer, beginning acutely, terminating by lysis and lasting in all rather more than a fortnight.
2. There is a rash, half way between that of typhus and that of typhoid, often copious.
3. There are generally some chest symptoms, but not at all marked.
4. The tongue is furred but not characteristic.
5. There is usually constipation.
6. There may be some epistaxis and some enlargement of the spleen.
7. Abdominal symptoms are slight or absent.
8. The general condition is febrile and dull, not often delirious and then mildly so.
9. The pulse is generally good.

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**X-RAY EXPERIENCES IN A MISSION HOSPITAL.**


During the nine years since the Röntgen ray apparatus has been in use in this hospital one has learned certain lessons which may be of profit to others similarly situated; and I would beg of my hearers to remember that my object in writing this paper is not to burden you with exhaustive lists of cases, but to aim at convincing all medical missionaries that for the sake of the efficiency of the work no hospital is complete without an X-ray outfit constantly available for use.

Almost as important as a well organized pathological laboratory to deal with bloods, secretions, tumours, and the like, I believe that many lives have been saved here by the use of Röntgen rays; and I have no hesitation in affirming that many lives have been lost and a far greater amount of suffering allowed by those of us who are satisfied to work without their help. Now it is a curious fact that our first real troubles have arisen since the day I promised to write this paper! This probably is connected with the further fact that the outfit has been in use for nearly nine years without renewals, excepting storage batteries. And this is no small testing, for though such things are possible in

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*A paper read at the Biennial Conference of the C.M.M.A., held in Shanghai, February, 1915.*
Europe or America, yet in Ningpo, subjected to damp tropical heat and unskilled operators, even the best apparatus is apt to break down.

Our outfit consists of switchboard with ammeter and voltmeter and resistances, a Mackenzie-Davidson mercury interrupter, and a ten inch induction coil; the spark tubes which came out originally are still in use, though their resistances have increased in every case. The whole was made to work with 25 volts, derived either from a three-quarter horse-power kerosene oil engine and dynamo, or from storage batteries charged at intervals from it. It is a great convenience to be able to use the rays at a moment's notice by the aid of storage batteries, and to recharge at regular intervals. One very important piece of advice I can offer, based upon painful experience, is to keep these storage cells in a well ventilated and well locked room; for they may be hopelessly ruined by merely connecting the terminals without suitable resistance having been interposed, and nothing is easier to a coolie with a taste for experimental science.

Of course in a place where a company exists for public lighting there will be, theoretically, no need for an engine and dynamo and storage battery; but as a matter of history is it not a fact that Chinese electric lighting companies sometimes break down, and on these occasions it is desirable to have an alternative source of supply.

It may be asked whether it is absolutely necessary that the doctor should be an expert electrician, or have had special teaching in the subject before he instals an X-ray outfit in his hospital; and my answer is that the more he knows of general principles and his particular apparatus, the fewer the occasions of breakdown. On the other hand, it is not much use to go exhaustively into the mechanism of, say, the outfit in one of our large home hospitals, and then try to grapple with the problems connected with a quite different set of apparatus in the mission hospital. There are members of this Association who are mechanicians by nature or by training; there are others (I among them) who are ignorant and have to acquire knowledge by frequent and dirty dissection of each individual piece of apparatus. Almost the only piece I have not pulled to pieces is the induction coil, and I confess I tried to do so on one occasion of distress.

I have tried to train Chinese house surgeons to do some of the work; and it is wonderful how they will in most cases rise to their opportunities; but ultimately the responsibility will be upon the foreigner, as is the case in every other department of the work at present.

With a small hospital of seventy beds, some 800 in-patients, and about 15,000 out-patient visits, I calculate that from 120 to 150 cases
are examined in the year, and the work will fall under three heads, *viz.*, fluorescent screen work, photographic work, and finally treatment by several exposures. And here I frankly confess that I have not felt myself qualified to treat cases with repeated exposures to X-rays. I have, however, the utmost faith in its curative effect in many conditions, and I believe that valuable as is radium that X-rays of a suitable degree of penetration and with specially devised methods of use will some day work as great marvels of cure in malignant and other forms of disease.

I have, inconsistently perhaps, in a few cases of enlarged spleens and superficial malignant growths tried the effect of X-rays: but Chinese patients in my limited experience do not seem willing to come at regular intervals for such treatment, unless they see rapid improvement, and in my ignorance of exposures and the like, I have felt it right to use the rays as a means of diagnosis rather than for curative purposes; at the same time I may say that I have so far not seen any bad effects from exposures either in my own person or on others; naturally we take care to use leadrubber gloves and protective apparatus as far as possible.

In cases such as suspected renal calculus or early tuberculosis of bone, fractures in neighbourhood of joints, foreign bodies of low density, or when special circumstances exist, the photographic method should be employed. But the rigid economy necessary in the average mission hospital prevents one from using many photographic plates except in absolutely necessary cases.

I used to use Lumière plates, but since the Ilford Company has begun to turn out equally good plates at a smaller price, I have used the latter, being somewhat different from ordinary plates in that there is a thicker emulsion. Looking over the records of cases seen, the class dealing with bullets and the like is prominent.

The Chinese have a natural tendency and liking for sport, as those of us who have wandered over their fields in search of pheasants can testify, nor can we forget their almost invariable delight in leading one to likely spots. But their ideas of sport are many and curious; they include sitting with a blunderbuss loaded with small stones, old iron, etc., until the pheasant or other bird is within a dozen yards, and thus they aim at economy, even if only bits are left for the pot. Those who have seen their guns will understand why the custom exists in some places of requiring the gunsmith to fire the first shot by way of experiment!

One of our patients was a fisherman who may have omitted this precaution, for he stated that the very first shot he took blew away
half his hand. "Sport" might almost include that patient who gathered fruit from trees holding a loaded gun with the barrel end; he incidentally or accidentally gathered some 160 iron shot of varying sizes in his thigh; this case shewed two things in addition to pointing a moral:—firstly, the photograph shewed three or four times as many shot as the screen examination suggested; and secondly, the patient was able to leave hospital cured with some fifty shot still embedded in the tissues around the femur.

Another sporting habit in our neighbourhood is to place a string across a path connected with the trigger of a gun fixed in position; wild boar are thus expected to commit suicide on their way to destroy young crops by night. We have had several men with shattered legs, the result of rising before the sun to get to their fieldwork; one of these subsequently had a gap in the tibia of some 2½ inches or so, which we tried to bridge with the periosteum of a freshly killed pig, removed aseptically. It was not chosen, however, for any supposed connection with the wild boar trap.

Dare we include under the section of "sport" those hunting scenes in the theatre when the quarry was the elusive needle? We have never yet been reduced to the expedient of giving up the search and supplying a needle from our own scanty stores, after the fashion of legendary house surgeons of our student days. In such cases the X-rays have been of the utmost use to us, but in more than one the operation has been begun in the operating room and completed in the dark room with the further help of the fluorescent screen.

Two cases come before one; in the first the broken needle was found within the tendon of the flexor of a finger, and nothing but X-rays could have revealed it: the other had rested for four months in the substance of a lumbrical muscle, and took us two hours to find it. The habit which such bodies possess of wandering through the tissues was illustrated by one which travelled 4½ inches in three weeks; such operations should be performed directly after the position of the needle is made clear. We removed one needle penetrating the abdominal wall of an infant, piercing the stomach, but no bad effects followed; and another carried a Chinese doctor's needle in his body for two long years before removal in this hospital. But the greater number of our foreign bodies are bullets, and though we get plenty of soldier patients, and had as many as eight brought in at one time, yet on the whole the peasantry seem to claim the larger share; this is because robbery is the natural employment of the Chinese countrymen when times are hard. One young fellow of eighteen took a boatload of porkers to
market, met robbers, and was shot at two yards range, the bullet going through the side of the boat before lodging in his loin; he came to us with daily hæmaturia, was X-rayed and the bullet was seen and removed from the left kidney; during recovery we found that whenever carbolic lotion was used in dressing the wound hæmaturia resulted.

Some curious bullet wounds have been seen. Quite a number of patients recovered after penetration of the chest and lungs, one developed an extradural abscess after a bullet fractured his skull; another had the last two ribs shattered and a faecal fistula of the splenic flexure of the colon resulting, cured by enterorrhaphy. Two men were brought in together, bagged by the one shot of a friend, on an alarm of robbers being given: deliver us from such friends! But perhaps the most extraordinary was that of a man who was shot by a pirate from behind; the bullet entered his neck, passed forwards until it came out through the pharynx, and then proceeded to shatter the upper lip before passing on its course; he also recovered.

In these bullet wound cases it is often possible to reassure the patient, for it is even more comforting to him to know that the bullet has passed through than to be told by the surgeon that he can see it on the fluorescent screen, and that an operation is necessary; let us put ourselves in his position.

But peace hath its victories as well as war, and one out-patient came with a needle and thread well within the knee joint; with the help of the X-rays, iodine skin preparation, and collodion dressing, the patient was operated upon as an out-patient successfully. One man underwent a course of home treatment at the hands of his wife; he seems to have had an abscess of the buttock and his wife operated upon him with the three-inch solid silver pin she took from her hair; unfortunately it slipped from her hand—it was 47 days later that the patient husband was X-rayed, and the surgical instrument was removed from an immense abscess, considerably altered in colour.

Year after year we have children and adults brought to us, having swallowed all sorts of articles; with the children it is either large cash or ten cash pieces, which have some difficulty in entering the cardiac end of the stomach; these coins can easily be seen by the relatives, even by the very stupid. The coin catcher is usually sufficient to bring it up, which is very pleasing to the doctor and the audience, or to push it down into the stomach which means an exercise of patience. Women occasionally try to commit suicide by swallowing gold rings; no ill effects usually follow in my experience. One man tried to kill himself by swallowing a Mexican dollar, having lost all but this one coin by
his gambling fever. The stomach was to have been opened, as the man assured us that he could feel pain there, and he was not now so keen on death. However, he was screened and the dollar was seen not in the stomach but in the oesophagus at the level of the cricoid cartilage, not causing him the slightest pain in that position; we then removed it under chloroform by oesophagostomy; this patient gave us additional joy in that he seemed to have found a new hope in life through what he learned in the hospital services.

Two other oesophagostomies come to our mind, also men. The first, during an afternoon nap, managed to swallow a false tooth plate: after doing a tracheotomy to relieve the dyspnoea, an X-ray photo shewed the native-made plate near the cricoid cartilage level, and making a paper model of the plate astonished the patient not a little at our accurate knowledge of what was still within him: the X-rays were of the utmost help in the subsequent operation, for the manipulation of a jagged tin-like plate through an already ulcerating oesophagus is not without its risks. The other was a young man who felt something sharp as he gulped down his rice: he exclaimed that he was "done for," but, hearing from neighbours of the previous case, came to hospital 12 hours later; in this case the rays seemed to suggest that the needle was either in or close to the oesophagus, but when it was explored it was found after a laborious search between the carotid sheath and the vertebral column. This rich young man gave the clearest evidence of a changed life, for until he died some years later from cholera he was full of gratitude and, in spite of persecution from those of his own household, a constant witness of the Truth.

A school girl who was suffering from stomach ache gave the history that she had swallowed a brass thimble some eight years before, and though there was a dark shadow and a definite mass in the right hypochondrium we were not allowed to explore. Another patient told us he had swallowed 46 Chinese cash and 22 silver ten cent pieces, and seeing nothing of this hidden treasure perhaps helped us in diagnosing his mental condition.

Another afflicted with melancholic insanity was sure that he had no bones—and even the sight of their shadows in the light of X-rays was insufficient to reassure him.

With reference to bones fractured we usually put the limbs up in splints with the assistance of the X-rays, and the man who is overproud of his skill in the art of setting fractures should examine them with the rays after he has done his best without; he would be surprised at the sight! Probably the fact is that any credit in good results obtained is
chiefly due to nature, considerably hampered by the well-meaning surgeon. As an example we recently treated a schoolboy with simple fracture of both tibia and fibula in the lower third of the leg; here no splints were used after the first week, except just to support the leg at night (possibly this also was an excess of zeal); and yet with daily massage and movements from an untrained man this boy was walking three weeks after the accident with but slight stiffness; and eight weeks later we had the pleasure of seeing him engaged in winning prizes at the school athletic sports!

Dislocations are frequently met, and are of such a nature that in our experience treatment is quite different from that which would be required in non-Chinese practice: this is well illustrated by numerous cases of elbow, and a small number of shoulder, dislocations. The reason is obvious, for we can hardly remember any cases of the latter brought to us earlier than three months after the accident. And on X-raying the fact is made plain that firm fibrous union has taken place within and without the joint, and the muscles also have contracted to adapt themselves to the new situation. In some cases there is a slight amount of movement possible but after our experiences we have come to the conclusion that more harm is done by attempts at reduction, and that an open operation with excision of varying amounts of the articulation will give the best results.

Too much emphasis cannot be placed on the fact that the Röntgen rays are never to be used alone, but in combination with all the ordinary means of diagnosis at our disposal. We cannot deny that there are many pitfalls for the man who has not served his apprenticeship; but so long as he uses this method of diagnosis with due regard to his other findings he will not go very far wrong; for example, possibly an expert would be able to diagnose pulmonary tuberculosis from an X-ray photograph, but the majority of us would trust him and his findings the more had the lungs been examined with a stethoscope and the sputum found to contain tubercle bacilli.

This can be illustrated by the case of a man who complained of indefinite right hypogastric and lumbar pain of a few weeks' duration, and was evidently seriously ill; there was nothing to be seen or felt externally; his urine was normal and his temperature very high; his lungs were normal, and his past history inconclusive. A blood count was done, and an absolute leucocytosis of a high polymorphonuclear type found. X-rays then were used and showed that the diaphragm was elevated on the right side, and a photo shewed an indefinite fuzziness in the interval between the diaphragm, spinal column, and
the dome of the liver. Taking the various indications we diagnosed a suprahepatic abscess and under an anaesthetic the aspirating needle revealed pus at a depth of nearly three inches in the exact position showed by the photograph; an open operation was done straightway and drainage cured that patient of a large suprahepatic abscess (staphylococcal) within two weeks; how simple the diagnosis seems in the light of subsequent results, but those of us who admire "Sherlock Holmes" must have wished many a time that we had his power of diagnosis.

In every case of suspected liver abscess we examine with X-rays and the following case is of interest; a young Englishman seen in consultation some years ago complained of chronic fever, but his blood examination and counts were not indicative of anything definite; so far as I know he did not complain of liver symptoms, but he was X-rayed and the only abnormality was a sluggishness of the diaphragmatic movements on the right side as compared with the left. His illness seemed to clear up under treatment, which was previous to the days of emetine injections. We felt that there might be a commencing liver abscess. Three years later he was met casually, and he told me he had just been operated upon for a liver abscess. Was this merely a coincidence or the same abscess of which we had seen the premonitory signs?

So important do we feel the necessity of close co-operation between the X-rays and other methods that we may relate the example of a very careful house surgeon in this hospital who twice under chloroform made incisions into brawny swellings at the lower end of the thigh of a man with fever, and yet could find no pus even though he had previously done a blood count and was sure pus was present. We then took a photograph and the condition was seen to be a large collection of pus stripping up the periosteum and forming a jacket around the lower end of the femur, the brawny subcutaneous swellings being entirely separate; a third operation and incisions down to the bone completed the cure, but how absurdly simple a case to relate!

Latterly we have been thinking over the numbers of patients suffering from chronic dilatation of the stomach, visible peristalsis, constant vomiting and pain in epigastrium; the long history of some of these almost excludes malignant disease, and both sexes are affected. We have been examining these patients with the X-rays after giving them a test meal of barium sulphate one ounce mixed with 10 ounces of rice gruel; in this connection it is important to note that barium sulphate is about ten or twelve times as cheap as what was originally used, viz., bismuth salts of various sorts.
It is most interesting actually to see the contortions and contractions of the stomach on the fluorescent screen, which in the average case is quite possible; in one case the lower margin of the stomach was well within the pelvis and the pylorus in its normal position, forming the so-called "water trap closet" stomach; but in our Ningpo work patients so far have refused gastro-enterostomy with two exceptions, and I am convinced that many of these cases are ideal ones for that operation.

Some time ago a middle-aged man was an in-patient with what we diagnosed as pericolitis, especially in the region of the splenic flexure; being treated with daily irrigations he left us much improved; nearly a year later he was readmitted, and in addition to his former treatment, the help of the X-rays was invoked, after giving him an enema of rice gruel and barium sulphate; to our great information and interest we could see on the fluorescent screen that the normal descending colon at the splenic flexure had shrunk in lumen to the diameter of an ordinary lead pencil, and as he refused short circuiting of the bowel, if we see him again it may be with actual obstruction and he will be in a far less satisfactory condition for the operation.

At the outset of this paper I expressed the hope that it would not become "an exhaustive list of cases," and I must apologise for having given details of so many, but I can plead that at any rate it was far from exhaustive.

I repeat, in conclusion, the statement that no hospital is complete without an X-ray apparatus constantly available for use, and I hope that the financial difficulty (which is not as great as some imagine), will be done away with by some fairy godmother coming to the rescue of each member of the China Medical Missionary Association who is convinced he would do his work the better for its aid.
ATYPICAL FEVERS AMONG THE CHINESE IN FORMOSA.

Among the many subjects of great medical importance that we have to deal with in Formosa, there is one that, during the past year, has been specially forced on our attention, namely, that of enteric fever. Unfortunately so, as having been the cause of very serious illness in a clerical colleague and of death in one of our Formosan hospital assistants.* In the one case the apparently special virulence of the poison in its action on the heart quite marked it out from the ordinary run of typhoids; while the other belonged almost to the ambulatory type of the disease, and the temperature chart was wholly misleading. In the latter case suspicions were raised as to the nature of the disease and the patient was treated as a case of enteric fever, and finally proved the correctness of the diagnosis by a sudden perforation of the bowel. The sequel was most disappointing. The patient was operated on within five hours of the time of perforation, a small hole was found in the ileum about a foot from the caecum and sutured, and for some days he seemed to have a good chance of recovery. The peritonitis seemed, however, gradually to continue to spread and he died nearly six days after operation.

The whole subject of continued fevers in the East, is one that requires much more careful study, specially with reference to the question of enteric fever. Three points may be mentioned as rendering the subject an especially perplexing one out here.

1. The question of the prevalence of the disease among young children. In this connection I can only speak from that most unsatisfactory of all forms of evidence—personal impressions. Typhoid fever among the Chinese adult population is a comparatively rare disease when compared with its prevalence among foreigners coming to China.

There is no reason to suppose that any race is in any way immune to the disease—certainly the Chinese are not. How then are we to account for this fact? For myself I strongly suspect that an abortive form of typhoid is common amongst young children and hence its relative infrequency among adults. This form, if I am correct, is very different from what we regard as a typical typhoid attack and possibly many cases of slight fever of a continuous or irregularly intermittent type, with few, if any, other symptoms occurring in young children are

* These cases were under the care of Dr. Gushue-Taylor.
Clinical Notes.

of this nature. It is possible that the bulk of our cases of non-malarial continued fevers are really due to this cause.

2. The temperature chart is often no guide to the disease. Being no true guide where we have been accustomed to look for one, it is seriously apt to lead one astray. From time to time we have enteric patients in our wards exhibiting the orthodox febrile phenomena of a typical attack of typhoid fever, but these are rare. In a country where malaria is ubiquitous, attacks of malarial pyrexia complicate practically every other kind of disease, and among these typhoid fever. In any case of typhoid then, on the one hand, irregular rises and falls of temperature are apt to be common, and on the other, a pyrexia which more or less markedly yields to quinine, may still be in essence a typhoid temperature.

3. On occasion the disease may be due to the genuine Bacillus Typhosus and a typical Widal reaction may be obtained. Such are, however, but a small minority of the cases. The rule is that the reaction fails to give any satisfactory result, and I have no doubt that the bulk of these are due to one or other of the para-typhoid strains, two of which are common here. The whole subject, as remarked before, requires careful and prolonged study.

A kindred question also arises concerning other of the continued fevers. Does typhus fever exist among the Chinese population of Formosa? There is no direct evidence to show that it does, but it will be wise in connection with the following cases to keep the possibility of the disease being occasionally met with in view. Osler states in relation to typhus fever:—"Isolated cases may be very difficult to distinguish from typhoid fever. ......................... In sporadic cases the diagnosis is sometimes extremely difficult. I have seen Murchison himself in doubt, and more than once I have known a diagnosis to be deferred until the sectio cadaveris."

The following two cases are therefore, I think, of considerable interest. A girl aged 16 was admitted to the Tainan Hospital for "fever" and the case was diagnosed as one of enteric fever. According to the history the time was the end of the first week. The temperature varied between 103° F. and 104° F. for the next week. No eruption could be seen; there was no diarrhoea. The general condition seemed to correspond with typhoid at this stage, and I had no doubt about the diagnosis until the 15th day when the temperature fell by crisis in a few hours and never again rose above normal. My only comment on this case is, that regarding the pathology and condition of the bowel in a case of typhoid, a termination of this nature seems inconceivable.
The other case was that of a man of about 40 years of age, whom I saw in his own house. He was the brother of a capable Chinese doctor, from whom I obtained all the details of the case. He was seized with an attack of "fever" and from the second day onwards a temperature chart had been kept. The temperature rose steadily to between 104° F. and 105° F., which it reached about the fourth day, and continued with very little variation at this height until the 15th day when it fell to normal in the course of about twenty-four hours. On the fifth day a rash appeared and I was then asked to see the patient. The rash was a typical "measles" rash and affected every portion of the man's body from his head to his feet. As to the nature of the eruption it was impossible to see any distinguishing feature from "measles." There were no cases of measles in or around the house, and the temperature chart would seem to exclude that disease.

It is impossible to dogmatise from such cases as these, but it seems to me it is within the realm of possibility that they were atypical cases of sporadic typhus fever.

JAMES L. MAXWELL, M.D., B.Sc., (Loud.).

Annual Report, TAINAN HOSPITAL, FORMOSA.

CASE OF FULL TERM EXTRA-UTERINE PREGNANCY.

Woman, aged 42.

Obstetric history:

History of present illness as given by patient:

1913, March, no menstrual period.

April, pain left side abdomen with vaginal bleeding which soon ceased.

April to July, in bed with abdominal pain.

August to October, no pain, patient up and about.

November to December, abdominal pain, vigorous movements of child.

1914, January 4-5th, severe abdominal pain, labor pain which stopped on the 6th, but abdomen was sore for about three weeks. This pain was accompanied by vaginal bleeding which persisted irregularly till March 24th.

March 28th to April 4th, abdominal pain, no vaginal bleeding.

On admission the abdomen was very prominent, looked like a transverse presentation with head in R. I. F., cervix very high up, and not dilated. We made the mistake of diagnosing a transverse presentation which would not come down, but the cervix was so high that one could
FIG. I. MYXOMA OF BREAST (MAXWELL)
FIG. 2. FIBROMA OF BREAST (MAXWELL)
Clinical Notes.

not be sure of its condition. Made the second mistake of not believing the patient's history; she said she had been pregnant twelve months.

Operation: Started to do a Cæsarean section, but found a full-term extra-uterine gestation, the child lying in the left side of abdomen with the uterus over in the R. I. F. Child removed from its bed with as much of the surrounding sac as could safely be taken away, then the margins of the sac were stitched to the abdominal opening and the cavity packed with two towels. The bowel was adherent all around the sac.

Patient ran a septic temperature from 97° to 103° F. for 37 days, after which the temperature remained normal, and she made an uninterrupted recovery. Seen 5 months after operation the wound had quite healed, and her only discomfort was a little pain on menstruating.

The dates given by patient are manifestly wrong, but making allowance for this discrepancy one can read the progress of a left tubal gestation, rupture, quickening, spurious labour, attempts at the resumption of menstruation. The abdominal pain which brought her to us may have been a slight attack of peritonitis as the sac was injected and a little angry looking.

Child weighed 7 pounds and was well formed.

G. Gushue Taylor, M.R.C.S., L.R.C.P.,

Annual Report, Tainan Hospital, Formosa.

TWO RARE TUMOURS OF THE BREAST.

The cases reported are examples of two of the rarer kinds of breast tumours. Myxoma involving the whole breast is distinctly uncommon. The removal of the pectoralis major muscle with the tumours has been recommended but is probably unnecessary. In the second case the tumour may have started as an adenofibroma, but 33 years of age is late for this form of tumour to commence, and in the microscopical sections parenchymatous tissue was conspicuous by its absence.

1. MYXOMA OF BREAST. (FIG. I.).

The patient was a woman, aged 40, who came to the Yungchun Hospital in 1907.

The tumour had existed for about four years and the left breast appeared to be hypertrophied, and the skin over it a little like elephantoid tissue. There was no ulceration of the skin or retraction of the nipple and there were no enlarged glands to be felt in the axilla.
The breast was freely removed under chloroform, the axilla and the pectoral muscle being left untouched. She was discharged healed in twelve days, and was perfectly well at the last report, seven years later.

Microscopically the tumour was a myxoma.

II. FIBROMA OF THE BREAST. (FIG. 2.).

The patient was a tall healthy looking woman 53 years of age. She had a large hard tumour in the left breast, no enlarged glands were to be felt in the axilla and the right breast was normal.

For the last twenty years she had been conscious of a slowly growing tumour in the breast, and during the last six months it had begun to grow rapidly.

The skin was adherent over one spot on the outer side where it was about to ulcerate.

The growth was removed with the remains of the breast, under chloroform, on the 21st of March, 1914. There was no difficulty in getting clear of the growth and as the axilla appeared to be normal it was not opened. She made a rapid and complete recovery and left hospital 18 days later and has remained well since that time.

On section the tumour appeared to be a malignant growth grafted on to an innocent tumour. It was stony hard in the centre and some calcification had taken place.

Microscopically, however, it proved to be a pure fibroma and there was no sign of malignancy. The tumour is now in the museum of the Foochow Medical School.

J. PRESTON MAXWELL, M.D., F.R.C.S.,
YUNGCHUN.

A STUDY OF THE HEART IN 180 CONSECUTIVE CHINESE STUDENTS.*

A. CONDITION OF THE PULSE

1. Rate. Average, resting... 73.97 After exercise... 98.90.
   2 cases, without valvular lesion, never less then 96, probably from a neurotic cause.
   3 other cases, with definite valvular lesion, 96-108.
   1 case, serious mitral involvement, 120.

2. Volume. In 11.1% volume distinctly below par.
   Increase of volume in only two, associated with thickening.

* A paper read at the Biennial Conference of the C.M.M.A., held in Shanghai, February, 1915.
Clinical Notes.

3. Tension. 25 cases, or 13.88\%, with diminished tension.
   4 cases, or 2.2\%, with increased tension. Absence of increased tension probably diminishes significance of percentage of cases with thickened wall.

4. Vessel Wall. 48.89\% showed definite thickening of the wall of radial artery. 65 cases, or 36.11\% showed only slight thickening: 19 or 10.55\% showed moderate thickening: while 4 or 2.2\% had markedly thickened vessels. Of these 4, two had no cardiac signs of note: one had hypertrophy of left ventricle, and one, mitral insufficiency.

B. CONDITION OF THE HEART

1. External Inspection. In but three cases was there any precordial bulging. Precordial pulsation in 12.

2. Palpation. Thrill present in 8 or 4.4\%. Marked in 4 cases.

3. Percussion. Deep dulness increased in 23 or 18 1/3\%. Dulness increased to the right side alone in 19 cases or 19 1/2\%: to the left alone in 8 or 4.4\%: in both directions in 6 or 3.3\%.

The apex beat was regularly in the 5th interspace, being found but 5 times in the 4th and twice in the 6th. The apex beat averaged 6.8 cm. from the mid-ster nal line.

4. Auscultation. (a) Mitral Area. In 46 out of 180 students examined, or 25 1/2\%, there were abnormal sounds as follows:—

- 1st sound loud and booming ...
- Both sounds loud and booming ...
- 1st sound reduplicated ...
- 2nd sound reduplicated ...
- 2nd sound accentuated ...
- Soft systolic murmur untransmitted ...
- Systolic murmur, transmitted to axilla ...
- Slight presystolic rumble ...
- Loud presystolic murmur ...

Thus, in 40 cases, 22.2\%, definite murmurs were present, 18 systolic and 22 diastolic. Of the 18 systolic, none had murmurs replacing 1st. sound, thus showing fair compensation. About half showed valvular lesions. Of the 22 diastolic murmurs, 17 of the cases had enlargement of right of heart.
Cause of this form of mitral disease possibly anæmia, attended by augmented arterial tension.

(b) Tricuspid area. 8 cases involved (4.4%). In only one a definite thrill, accompanying systolic murmur. This case also had mitral stenosis.

(c) Pulmonary area. Abnormal sounds in 37, or 20.5%. In 26 nothing but accentuation of 2nd sound, but probably this indicated involvement of lungs. In 5, or 2.78% a systolic murmur present.

(d) Aortic Area. Abnormal sounds in 34, or 18.9%. In 32 cases, accentuated 2nd sound. In 3 a definite systolic and in one a presystolic murmur. In one of the three, a loud murmur heard in cervical vessels.

(e) Musculature. Weak in 9 cases, or 5%

F. H. Hume, M.A., M.D.

Yale Mission, Changsha
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All communications on Editorial Matters, Articles, Letters, and Books for Review should be addressed to the Editor of the Journal.

Changes of address, departures and arrivals of members of the Association should be notified to the Business Manager, Mr. A. W. Hayward, 9 Woosung Road, Shanghai. Members are requested to invite all missionary physicians who come to China and other parts of the East to join the Association.

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

Editorial.

THE HEALTH OF MISSIONARIES.

Now that the vacation season is over we hope that all missionaries who have been able to get away are returning to their work with fresh health and energy. Occasionally, unfavorable criticism of missionary vacations is heard from business men and others in the East who do not sufficiently consider that missionaries, as a rule, are out here for their lifetime; and that the success of their work, from the human point of view, depends largely upon their staying power. It is not often that one is able to obtain a comparison based on reliable figures of the health records of the two classes,—missionary and non-missionary,—living under similar conditions. Hence the following official report from the Gold Coast, Africa, is of peculiar interest as showing that in certain parts of the world, at any rate, the death-rate is far heavier among missionaries, and that this death-rate could be lessened by more frequent vacations or longer furloughs.

The death rate among 740 European officials under the Gold Coast Government was 8.10 per mille and among European non-officials 8.49. In a population of 796 European employees of merchant firms, the death-rate per mille was 8.7 and among mining companies 5.3; whereas, among 126 missionaries, the rate was 31.7. The respective invaliding rates were 5.74, 3.96, 1.62 per cent. The principal District Medical Officer makes the following remarks on this subject:

"The death-rate for trading and mining companies has declined, while that for missionaries has increased, but the reverse
is the case with the invaliding rate, it having increased for trading
and mining companies, but declined for missionaries. I am afraid
I can give no explanation of this latter, except that the same
applies to the official figures."

"The number of missionaries dealt with is of course small, the
law of chances may have dealt hardly with them, and this alone
may account for the grave rate of mortality. But, in larger figures,
it may be regarded as possible to detect an increased mortality rate
with a decreased invaliding rate. 'Invaliding' is a preventive
measure, and while in the interest of economy of both public and
private funds laxity in advising it is to be deprecated, a well-balanced
view of the subject whereby complete change from an undesirable
environment is secured, is both a life and money-saving measure."

Taking a wider survey of the subject it may be interesting to
recall the statistics concerning the invaliding home of missionaries
published in 1913 by Dr. Basil Price, who dealt with a total of
1479 lives, of which 1051 were from the records of the Church
Missionary Society. The figures are given as they appeared in the
original paper.

(1) China.

<table>
<thead>
<tr>
<th>Causes</th>
<th>North (58 cases)</th>
<th>Central West (79 cases)</th>
<th>South (66 cases)</th>
<th>Total (203 cases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurasthenia</td>
<td>44.8%</td>
<td>17.7%</td>
<td>16.6%</td>
<td>25.4%</td>
</tr>
<tr>
<td>Insanity</td>
<td>5.1</td>
<td>12.6%</td>
<td>7.5</td>
<td>8.8</td>
</tr>
<tr>
<td>Malaria</td>
<td>8.6</td>
<td>11.4%</td>
<td>15.0</td>
<td>11.8</td>
</tr>
<tr>
<td>Pulmonary Tuberculosis</td>
<td>8.6</td>
<td>8.8%</td>
<td>18.0</td>
<td>10.8</td>
</tr>
<tr>
<td>Typhoid and Paratyphoid</td>
<td>13.8</td>
<td>7.6%</td>
<td>7.5</td>
<td>9.8</td>
</tr>
<tr>
<td>Dysentery</td>
<td>5.1</td>
<td>7.6%</td>
<td>3.0</td>
<td>5.9</td>
</tr>
<tr>
<td>Sprue</td>
<td>2.5</td>
<td>4.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typhus</td>
<td>5.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small-pox</td>
<td>3.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anæmia</td>
<td></td>
<td></td>
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(2) Principal Missionary Fields of the World.

<table>
<thead>
<tr>
<th>Chief Causes of Invaliding</th>
<th>India</th>
<th>China</th>
<th>Japan</th>
<th>Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurasthenia, etc</td>
<td>20.6%</td>
<td>25.4%</td>
<td>81.25%</td>
<td>28.8%</td>
</tr>
<tr>
<td>Insanity</td>
<td>4.8%</td>
<td>8.8%</td>
<td></td>
<td>1.5%</td>
</tr>
<tr>
<td>Typhoid Fever</td>
<td>16.6%</td>
<td>9.8%</td>
<td></td>
<td>8.2%</td>
</tr>
<tr>
<td>Malaria</td>
<td>13.3%</td>
<td>11.8%</td>
<td></td>
<td>19.4%</td>
</tr>
<tr>
<td>Dysentery</td>
<td>6.4%</td>
<td>5.9%</td>
<td></td>
<td>3.7%</td>
</tr>
<tr>
<td>Pulmonary Tuberculosis</td>
<td>3.2%</td>
<td>10.3%</td>
<td></td>
<td>3.0%</td>
</tr>
<tr>
<td>Small-pox</td>
<td>1.6%</td>
<td>1.4%</td>
<td></td>
<td>1.5%</td>
</tr>
<tr>
<td>Blackwater Fever</td>
<td></td>
<td></td>
<td></td>
<td>9.7%</td>
</tr>
</tbody>
</table>
These statistics, which probably cover a long period of years, are well worth careful study. The near future should show great improvement. Among young missionaries there is certainly far less serious sickness than formerly. The Mission Boards now require all candidates for the mission field to pass a very rigid medical examination before they are accepted, and are beginning to insist not only upon taking such a precautionary measure as vaccination but also measures which protect against typhoid fever and other preventable diseases. Moreover, non-medical missionaries are now more generally instructed how to take care of their health when living abroad. The work of such institutions as the Livingstone College in England is of inestimable value in this respect. The teaching there given is intended not only to help missionaries to safeguard their own health, but also to give them sufficient medical knowledge to deal with the ailments of others when qualified medical aid is not at hand. Over five hundred missionaries have been trained in this institution within the last twenty-one years. Such a course of instruction should be made available for all non-medical missionaries. It would do no harm even to those who believe in faith-healing to the exclusion of all medical and surgical treatment.

Apart from dysentery and sprue, the common gastro-intestinal diseases do not, in the figures here given, seem to be frequent causes of invaliding, yet judging by experience in the field not a few missionaries are obliged to go home for a longer or shorter period on account of them. We need the statistics of the American and various other missionary societies, including those of the Roman Catholic Church, in order to be on firm ground in dealing with the causes of physical disability in the mission field.

The gravest problem arises from the number of cases sent home because of nervous breakdown. We can combat malaria, dysentery, typhoid, and the other diseases in the list with the practical assurance of victory, but nervous disorder is a more subtle, and in the long run, a more dangerous foe. The following table shows that in the invaliding of missionaries, Japan has the highest percentage of neurasthenic disorders, and China of acute mental diseases.

<table>
<thead>
<tr>
<th></th>
<th>India</th>
<th>China</th>
<th>Japan</th>
<th>Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurasthenic disorders.</td>
<td>20.6%</td>
<td>25%</td>
<td>81.25%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Acute mental diseases.</td>
<td>4.8</td>
<td>8.8</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Total percentages.</td>
<td>25.4</td>
<td>33.8</td>
<td>81.25%</td>
<td>22.3</td>
</tr>
</tbody>
</table>
Such a large proportion of cases of neurasthenia in Japan must be partly due to climatic conditions, and the acute mental disorders of China may also be partly due to the same cause and to the frequency in the past of political disorders accompanied by mob violence. Nevertheless, when a high percentage of nervous troubles is found in every mission field there must be some common underlying cause. In the majority of cases, certainly among those who have passed the meridian of life, we think it is overwork, though some missionary critics may receive the statement with incredulity.

When a missionary first comes to the field he rejoices as a strong man to run his course. He studies the language by night and day, and undertakes the arduous and multifarious duties which only those know who are actually engaged in missionary work. As long as he is young he has the strength and resiliency which enable him to work at high pressure, if not with ease, at least without exhaustion. But sooner or later, he can no longer keep the pace, his energies begin to flag, his recuperative power is less. Furthermore, it is just at this time that his age and experience bring to him new and heavier responsibilities. He shoulders the new burdens, works as hard as before in spite of certain warnings, perhaps stoutly declining to recognise that his powers are not as fresh and strong as they were, or else feeling that the demands of his work are so imperative that he must respond to them at whatever cost to himself. Probably his only daily recreation is a solitary walk during which his mind is still occupied with the details of his work. As "it is fret, hurry, worry, and the endeavor to accomplish some task in too short a time that wearyies and wears the thinking organ," he begins to suffer from sleeplessness and other symptoms indicative of nervous exhaustion.

A restful vacation at this stage may be a great restorative, but the trouble is that when the overwrought missionary goes to the hills or to the seashore he usually takes his work and worries with him, attends numerous conferences and committee meetings, so that he returns to his station almost as wearied as when he left it. In this manner the strain continues until at last there is the inevitable break-down and a valuable worker is lost to the field. We may observe, without being too didactic, that the
lesson many of us have to learn is to recognise the limits of our mental and physical powers and to keep within them, ever bearing in mind that, in the mission field particularly, the quality of the work done is of far more importance than the quantity.

SPLENECTOMY IN KALA-AZAR.

The results of the medical treatment of kala-azar, notwithstanding the improvement reported in a few cases, are still very uncertain. There is no known specific capable of effecting a radical cure, even in advanced cases, by the complete destruction of the parasites. This is the more to be regretted as the prognosis is gloomy, most of the patients dying within a very few years. As in this disease there is not only great enlargement of the spleen but its functions are so altered or perverted by the presence of the parasites within its cells as to lead to most destructive blood changes, the operation of splenectomy to check the progress of the disease by conserving the patient's strength and powers of resistance seems a rational expedient and one well worth careful trial. Besides, experience has shown that in diseases other than kala-azar in which the spleen is diseased, its removal has benefited the patients.

Nevertheless, excision of the spleen in kala-azar has hitherto been a very rare operation; in fact, so far as can be ascertained, it has only been done three or four times. Hence the report in this issue of the Journal of the three splenectomies for kala-azar performed by Dr. Samuel Cochran, of Hwaiyuan, is of unusual interest and value. In two of the cases the increase of body weight after the operation, and the improvement in the haemoglobin percentage and leucocyte count, were rapid and striking. In the third case the disease had reached such an advanced stage that the operation was undertaken with reluctance and simply as the last resource. Even in this case there were encouraging features.

Of course, following so soon after the operations, only the immediate results have been reported. The early improvement may be followed by a gradual return to the previous grave condition such as sometimes occurs in other cases of operation for enlarged spleen with anemia. Further reports of the surviving cases will be awaited with interest and with the hope that the improvement in each case is being steadily maintained.
THE CO-OPERATIVE BOOK AGENCY.

The attention of our readers is directed to the business communication on another page of Messrs. Evans & Sons, which is not intended as an advertisement but as an explanation of a business matter which concerns all members of the Association when purchasing medical books.

As stated in the communication, arrangements were made a few years ago by the Association itself with various publishers whereby medical books ordered through the Association could be obtained much more cheaply than when ordered through the regular booksellers, or even direct from the publishers. In 1911, for various reasons, the Association entered into an arrangement with Messrs. Evans & Sons who agreed to act as its agents (superseding the local agents who had done this service hitherto), and to obtain medical books for members of the Association at the same liberal discount as before, but charging a small commission for their services. Owing to the present European war and other circumstances a few changes in the agreement have now been found necessary, and this announcement is issued by the firm after consultation with the Executive Committee and with its approval. The Executive Committee, however, wishes it to be clearly understood that in this matter it is simply acting in an advisory capacity. It has no desire to restrict the freedom of members as to the channels by which they obtain their medical books, and it assumes no responsibility for whatever arrangements may be made by members individually with Messrs. Evans & Sons. It does nothing more than approve this latest arrangement as offering, on the whole, what appears to be the easiest and cheapest way for those in China to purchase medical books.

MEETING OF EXECUTIVE COMMITTEE.

A meeting of the Executive Committee was held in Shanghai on July 1st, 1915. The following members were present—Drs. Venable, Beebe, Davenport, Merrins, and Morris. Dr. D. D. Main, honorary vice-president, was present by invitation. The minutes of the last meeting were read and approved. A motion was carried to co-opt Dr. Main as a member of the committee for the remainder of the biennium.
A letter from Dr. Cole was read resigning the editorship of the China Medical Journal, as he was leaving for England to volunteer for military service. His resignation was accepted, and Dr. Merrins, the associate editor, was appointed Editor. A motion was carried that the Secretary write a letter to Dr. Cole expressing the Executive Committee's appreciation of the earnest and valuable service which he rendered to the Association both as a member of the Executive Committee and as Editor of the Journal.

A motion was carried that a letter of thanks be sent to the China Continuation Committee for its valuable aid to the Association in granting G. $1,500 for the office and travelling expenses for the year of the Executive Secretary of the C.M.M.A.

A proposal from Edward Evans & Sons with regard to having a fixed rate of exchange (for six months at a time), to be used in the purchase of books through the Co-operative Book Agency was accepted by the Executive Committee, on condition that in case of a marked rise in the price of silver the fixed rate shall be altered correspondingly.

There being no further business the meeting adjourned.

Signed: H. H. Morris, Secretary.

SCHOLARSHIPS FOR CHINESE PHARMACISTS.

The China Medical Board has established three scholarships of six hundred dollars ($600) each, for Chinese students of pharmacy to enable them to go to the United States for further training. Suitable travelling allowances will also be given. No candidates will be considered who do not possess the following qualifications:

1. Sufficient experience in a pharmacy to demonstrate their interest in the pharmaceutical work and their fitness for it.

2. A sufficient knowledge of English to enable them to receive instruction in that language.

3. A general education equivalent to that of students who have satisfactorily completed one year's work in a good high school in the United States.

4. Candidates must be in good physical condition.

Applications for scholarships should contain the following information:

1. Name in full, in Chinese characters, and in Roman letters.

2. Age.

3. Whether married or single.

4. Present occupation and address.
5. Name, address, and occupation of father.

6. Schools and colleges at which preliminary education was obtained, with dates of entering and leaving each.

7. Institutions in which the applicant has received his training in pharmacy, with dates of entering and leaving each.

8. Diplomas or degrees obtained, with dates.

9. Names and addresses of teachers, doctors or nurses under whom the applicant has studied or worked, and from whom further information can be obtained if necessary.

10. Certificates from teachers must be submitted showing that the candidate meets the requirements as to education, knowledge of the English language, and experience in pharmaceutical work. A certificate by a qualified physician as to the physical condition of the applicant will also be required. No other testimonials should be forwarded by the applicant.

Applications should be filed before September 1st, 1915, and should be addressed, after June 1st, 1915, to the China Medical Board, c/o The Union Medical College, Peking.

[In a letter accompanying this notice, Mr. Roger S. Greene, the resident Director in China of the China Medical Board, adds the following statement concerning the purpose of the scholarships: "One difficulty which I think we shall have to contend with is that some young men, having taken the course in pharmacy, will wish to go on to study medicine. What we want, of course, is to get hold of men who are interested in pharmacy for its own sake, and can return to China to train other young men for work in mission hospitals and schools."—Ed.]

FOUR PUBLIC HEALTH CAMPAIGNS.

W. W. Peter, M.D.,

Since the national conference in February, 1915, four of the members of the Council on Public Health of the China Medical Association have helped in Public Health Campaigns in four cities,—Shanghai, Changsha, Siangtan, and Nanking. Altogether, over 68,000 people visited the Exhibit and attended the lectures.

(1) In Shanghai the Public Health Exhibit was set up at 28 Nan­king Road at the invitation of the King's Daughters' Society, the week before the annual Ratepayers' Meeting. Mrs. Thomas, the President, had the hearty co-operation of the members of her society, of several influential business men, and of Dr. Arthur Stanley of the Municipal
Health Department. The immediate objective of the Shanghai Campaign was to influence public sentiment in favor of a resolution to be presented at the Ratepayers' Meeting calling for an appropriation of Taels 65,000 for a Tuberculosis Sanatorium to be under the management of the Municipal Health Department. In the Campaign much was made of the fact that in the foreign settlement of Shanghai, over 1,000 persons die every year of tuberculosis. The resolution was passed, although a similar resolution had been voted down the year before.

The Exhibit was open to foreigners the last three days of one week, and to Chinese the first three days of the following week. Men with pads and pencils were stationed at the door to count the people and to distribute literature. Over 19,000 Chinese came to see the Exhibit in the three days.

(2) In Changsha, (May 10-15) at the invitation of the officials, the Exhibit was set up in the Government Education Hall. This building has a wide balcony on four sides and seats more people than any other place in the city. The campaign was financed largely ($150) by the Police Department. Working with Mr. Chang, the Commissioner of Police, were Dr. F. C. Yen of the Yale Mission, Mr. Ray C. Roberts of the Young Men's Christian Association, and a staff of workers numbering over eighty.

There was a double object in this Campaign. The first was the formation of a Public Health Society. This was organized at a feast towards the close of the Campaign, when Mr. Chang, Commissioner of Police, was elected president. Eleven of the most influential citizens of Changsha who were at the feast signed up as charter members. The earnestness of this small group of men may be judged by the fact that it was their own proposal to make the membership fee in this society $100.00, whether per annum, or for life we were too astonished to inquire.

The second objective in the Campaign was to start a fund of $20,000 for a Tuberculosis Sanatorium. About $5,000 was secured by the end of the Campaign in amounts from 10 cash to 200 dollars. Conditioned upon a certain amount of progress by July 1st, $1,200 was promised by the Governor of Hunan. The balance is to be raised by personal solicitation. A beautiful 15-foot model of the proposed Sanatorium, built by the Yale Mission architect and Dr. Yen, was a feature of the Exhibit.

The plan of the Changsha Campaign was to have (1) demonstrated health lectures both morning and afternoon as often as the hall filled
up, and (2) lantern slide lectures five nights of the week in each of four sections of the city. Five men each had a different lantern slide lecture to give four times during the week. Unfortunately, it developed that in three of the places where lantern lectures were to be given, the grounds and buildings were nothing but big, blind, stonewalled pockets which the people filled and hopelessly blocked long before the lecture was supposed to begin. But for this lack of rear exits, repeated meetings might have been held till all of the crowd had passed through in hallful sections. As it was, the thousands who somehow got tickets, but failed to get even to the gates, so blocked up the streets as to embarrass the Police Department. They had tickets and they would wait. Some were good-humored about it, and some were not. After two nights of this sort of thing, the lantern slide lectures had to be discontinued.

Before the opening of the Campaign proper, two training conference meetings were held, and the demonstrated health lecture was given at a third meeting of 75 officials presided over by the Governor’s representative. On Women’s Day, 3,800 women were present. The Government Education Hall having both side and rear exits was well suited for the rapid handling of one crowd after another. The high attendance mark of one day, Tuesday, May 11th, was seven meetings and 7,650 people, including lantern slide lecture meetings. There was no time to keep a record of the numbers in the stream which flowed into the Education Hall between the regular lectures and got the benefit of the Exhibit only. But there were 30,010 people who attended the 35 lectures during the Campaign.

(3) In Siangtan, Hunan, 30 miles south of Changsha, the Exhibition and Lectures were held in the Kwan Djeng Ting, a temple on the main street of the city, under the auspices of the Presbyterian Mission Hospital. Bad weather and high flood water cut down the attendance considerably. Towards the end of the Campaign, some of the workers went to the meetings in small boats across a lake covering what normally were rice fields separated by eight-foot embankments. It was possible to hold only a few evening meetings and these were never crowded. The people were thinking of public health in terms of boats and second storey houses. But there were 9,000 who came for the Lectures and Exhibit.

(4) In Nanking, the Campaign was conducted in the Y. M. C. A. building, under the auspices of Mr. G. P. Wong, the progressive Health Commissioner who himself made all the preliminary plans and ran the daily programme. There were no evening lantern slide lectures. The
two outstanding features of this Campaign were the address on Women's Day by Mrs. Feng Gwoh Djang, wife of the Governor, and the splendid, steady work done by the University of Nanking medical students. The Medical School not only sent over a large assortment of very interesting specimens but also dismissed its regular classes for one week in order that they might assist in the work. The students were assigned to certain hours at the Exhibit to explain the various sections to the people. The Nanking Campaign had more of a social aspect than any of the others. Gallons of tea were drunk in a pavilion overlooking a beautiful pond and garden. There were 17 meetings and an attendance of over 10,000 people.

No lectures were given during the Shanghai Campaign, but much stress was placed upon "explainers" talking to small groups. In Changsha there was splendid work done by as many as 15 explainers at one time, and by the several 'teams' of workers. In addition, demonstrated health lectures were given at the day meetings. At Siangtan the lectures were given entirely by Drs. Tooker and Vanderburgh, and by a trained nurse. At each of the three cities a lecture on "The Care of Your Baby" was given. At Nanking this lecture was demonstrated by a healthy baby who had a real bath and a number of other things given him on the platform to the great wonderment of many of the mothers present. This lecture by Dr. Tsao, was followed by another by Dr. Macklin who also made a few remarks about babies. To illustrate one of his points, he singled out a ruddy-looking baby in its mother's arms in the very front row of seats. Everybody craned his or her neck or stood up to see that particular baby. Dr. Macklin carried us all with him in his enthusiastic description of the baby and his wise mother who surely knew a great deal about bringing up children. But just as the doctor was pausing for breath and a start, he was interrupted by the meek but insistent voice of the mother who spoke up, saying; "Doctor, this baby spits blood. What shall I give him for it?"

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THE NATIONAL HEALTH LANTERN SLIDE EXCHANGE.

Through the courtesy of the Lecture Department of the Y. M. C. A. the China Medical Missionary Association has been able to purchase lantern slides on various health subjects. Many of these slides are in foreign setting and do not fully meet the needs of those wishing to give popular lectures to Chinese audiences. They will be put into Chinese setting as fast as possible and lectures will be written to harmonize with the slides.
At present we have about two hundred slides which are usable, and these may be rented after November first by writing to the department for them. Address:—C.M.M.A. Council on Public Health, Lantern Slide Exchange, 4 Quinsan Gardens, Shanghai. A temporary deposit of $25.00 yearly will be required of those who wish to use the Exchange, to cover safety of the slides. A regular rental will be charged for their use. An advanced rate will be charged on slides which are not promptly returned within the time limit.

We shall not be able, at present, to send slides to other places than those on the Eastern Coast of China. As the success of the venture in this restricted area is demonstrated the field will be extended. However, we have the negatives and will sell duplicate slides to those outside of this area who wish to use them. Sets may be made to order within a given time, which is usually about six weeks under favorable conditions. As far as possible, new slides pertaining to health problems are being made of conditions which exist in China. We need help in the way of negatives of as many such subjects as possible, such as poor sanitary conditions, crowding, subjects of epidemic diseases, patients with tuberculosis, and anything else of medical interest, all will be gladly received, and slides will be made from them. The films or negative plates will be returned to the owners in good condition after the slides have been made. One hundred men in a hundred different cities taking occasional pictures can augment our material more than a few men in a few cities working steadily, if they watch every opportunity to secure pictures of interest. Any sized negative is usable, provided it is a good clear one. Flashlights of interiors showing bad over-crowding are extremely difficult to obtain, and are much needed. Photographs of conditions favoring the easy transmission of disease, especially of tuberculosis, are plentiful, easily taken, and extremely desirable. Pictures showing flies breeding in filth, or any pictures of flies in relation to disease will be welcomed. Also pictures illustrating anything connected with malaria, filaria, uncinaria, schistosomiasis, or dysentery. As this is a new department of work, those engaged in it are anxious to obtain the co-operation of all members of the association. We need every help, every suggestion, every constructive criticism that can be given to extend the usefulness of this department. It is not simply the affair of a few, but of all who are working in China. Members have needs about which the department knows little or nothing. The department has material about which members know as little. Let these come together. Inform the department of your needs and the needs of your city, and it will help you.

The Council on Public Health had hoped to engage the full time of one man for this work, but this has not been possible. However, the undersigned will be able to give part of his time to the work and he depends upon the members for their co-operation in the various branches of the work of collating material, and solicits their suggestions as to methods of work.

C. HERMAN BARLOW.
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Audited and found correct,

J. N. Hayward,

Hon. Auditor.

22nd June, 1915.
MEDICAL SCHOOL REPORT, UNION UNIVERSITY, CHENGTU.

We trust that members of the China Medical Association will accept an announcement from far distant Szechwan. We are proud of the fact that we have begun our school, that our beginning is an accomplished fact, so we offer no apology for asking "a place in the sun" for our modest report. We are young but we are very vigorous and enthusiastic; we have lots to learn but being at the stage where one can assimilate most, we can say we are learning.

Union University (of which the Faculty of Medicine is an integral part) was first projected in 1904 and opened in 1910. It was established under the auspices of the following missionary organizations: American Baptist Foreign Mission Society; Friends' Foreign Mission Association (England); General Board of Missions of Methodist Church, Canada; Board of Foreign Missions of Methodist Episcopal Church, U. S., America.

The University consists of the Faculties of Arts, Science, Medicine and Theology. It is the only Christian University in a centre that draws from Kansu, Shensi, Szechwan, Shansi and Yunnan. The University is situated at Chengtu, which is one of the four strategic centres selected by missionary statesmen as a site for the erection of a Christian University. The University, although opened in 1910, was closed on account of the revolution during the autumn of 1911, but was re-opened in 1913 when the work was resumed with redoubled vigor.

The Medical Faculty began its work in the fall of 1914 of attempting to supply Christian physicians of an educational standard comparable with the medical standards maintained in America and England. The entrance requirements are graduation from Middle School or an equivalent standing ascertained by examination. Our first class now numbers seven. The medical curriculum, covering a course of six years, is as follows:

<table>
<thead>
<tr>
<th>FIRST YEAR</th>
<th>HRS.</th>
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<tr>
<td>ENGLISH</td>
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<td>ANATOMY (DIDACTIC)</td>
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<tr>
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<td>2 HRS.</td>
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<tr>
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<td>4 HRS.</td>
<td>PHYSIOLOGY</td>
<td>5 HRS.</td>
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<td>ANATOMY (DIDACTIC)</td>
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<td>(PRACTICAL)</td>
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**Fourth Year:**

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<tr>
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<tr>
<td>Surgical Anatomy</td>
<td>1 hr</td>
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<tr>
<td>Materia Medica and Therapeutics</td>
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<tr>
<td>Pharmacy</td>
<td>1 hr</td>
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<tr>
<td>Medicine</td>
<td>5 hrs</td>
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<tr>
<td>Surgery</td>
<td>3 hrs</td>
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<tr>
<td>Clinical Medicine</td>
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<td>Clinical Pathology (Fall Term only)</td>
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<tr>
<td>Medical Diagnosis (Spring Term only)</td>
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<td>Pathology and Bacteriology</td>
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**Fifth Year:**

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<td>Materia Medica and Therapeutics</td>
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<tr>
<td>Surgery</td>
<td>5 hrs</td>
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<tr>
<td>Obstetrics, Gynaecology and Pediatrics</td>
<td>5 hrs</td>
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<tr>
<td>Eye, Ear, Nose and Throat</td>
<td>2 hrs</td>
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<tr>
<td>Diseases of Skin</td>
<td>2 hrs</td>
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<tr>
<td>Tropical Diseases</td>
<td>2 hrs</td>
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<tr>
<td>Hygiene and Public Health</td>
<td>3 hrs</td>
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<tr>
<td>Nervous &amp; Mental Diseases</td>
<td>1 hr</td>
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<tr>
<td>Genito-Urinary Diseases</td>
<td>1 hr</td>
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<tr>
<td>Obstetrics, Gynaecology and Pediatrics</td>
<td>5 hrs</td>
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<tr>
<td>Clinical Medicine</td>
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<tr>
<td>Clinical Surgery</td>
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<tr>
<td>Special Clinics</td>
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**Sixth Year:**

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<td>Obstetrics, Gynaecology and Pediatrics</td>
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<td>Diseases of Skin</td>
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<td>Tropical Diseases</td>
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<td>Hygiene and Public Health</td>
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<td>Nervous &amp; Mental Diseases</td>
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<td>Genito-Urinary Diseases</td>
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<td>Clinical Medicine</td>
<td>4 hrs</td>
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<tr>
<td>Clinical Surgery</td>
<td>4 hrs</td>
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<tr>
<td>Special Clinics</td>
<td>2 hrs</td>
</tr>
<tr>
<td>Operative Surgery (cadaver)</td>
<td>1 hr</td>
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The course was made six years long principally for the reasons that we could thereby give the students enough English so that on graduation they would be able to read English text books and magazines, and also that in the last three years of the course a part, if not all, of the instruction could be given in English.

For the first three years of the course, the instruction is given in Chinese with the use of English terminology as far as permissible with their ability to understand. Moreover, by lengthening the course, we are enabled to give more Religious Instruction.

The following subjects are taught by members of Faculty of Arts and Science; viz.; Physics, Chemistry, Biology, Embryology, English, and Religious Instruction. At present, the following missionary physicians give the whole or part of their time to teaching in the Faculty of Medicine:

- H. L. Camright, Chairman of Faculty, Methodist Episcopal Mission.
- H. L. Irwin, Methodist Episcopal Mission.
- O. L. Killborn, Canadian Methodist Mission.
- W. R. Morse, Secretary of Faculty.

There are the best of prospects of additional teachers being added to the staff in the near future. We have good reasons for believing we will obtain the time of fifteen men for the whole Medical Faculty.

It might be thought that because we are so far in the interior and living in "turbulent" Szechwan that it would be particularly difficult to introduce western medicine, but the governors of the Province, both military and civil, have shown interest in the University to the extent of giving $3,000, (Mexican) each, and of frequently
attending our functions. The Governor has given us a human body for dissection.

The subject of practical Anatomy has been entered into with great enthusiasm by the students and they have shown themselves good workers in that branch. At date of writing, May fifteenth, we have been dissecting for over three months, and as far as we can see, the public ignores the fact. Certainly neither prejudice nor adverse criticism is manifested.

The members of the Faculty of Medicine unite on a basis of action in their services. There are no questions of religious beliefs but there are deep searchings for the best methods for work. We have a federation of the large Canadian Methodist Mission and Methodist Episcopal Mission Hospitals, even to the extent of publishing a common poster with uniform fees, and close affiliation with the Women's Hospital of the Canadian Methodist Women's Board. We have the most intimate unity in spirit and work. One's heart glows with intense enthusiasm because of the good-will that is manifested among the doctors and teachers.

Our object is the consolidation and conservation of effort; therefore, we are eliminating inconsistencies in administration, our intention being not only to prevent overlapping, but also to dissipate, as far as possible, misconceptions as to the best means of attaining the best possible results. This desire for greater efficiency led the Medical Faculty to draw up and present a resolution to the University Senate, which was passed in the following form: "Resolved to endorse the proposal that the various missions, in designating doctors to Chengtu, appoint them to Faculty of Medicine of Union University with the understanding that the Senate, through a committee of doctors, undertake the general supervision and direction of medical work in Chengtu."

The motion was passed by all the Missions on the field except one, which referred the matter to its parent Board. As a result, this resolution promotes the fullest co-operation and secures the best degree of efficiency possible. We thereby avoid reduplication of men and material as well as cut out overlapping and wasteful competition. Moreover, we all as nearly as possible benefit alike. It also favors the speedy specialization of various subjects by mutual selection of specialties, but, best of all, we are securing cordial mutual assistance by the careful division of labour. The foregoing is no "pipe dream", for we find it works and works well.

W. R. Morse,
Secretary of Faculty of Medicine.
EFFICIENCY OF HOSPITALS.

In May, 1914, the Philadelphia County Medical Society appointed a committee to consider "ways and means by which the efficiency of the hospitals in Philadelphia may be increased." This committee made an extensive study of the hospital situation in Philadelphia. The three reports of the committee embodying the results of this study, together with an introduction on "The Principles of Hospital Efficiency" by the secretary of the committee, are now issued in pamphlet form.

One of the most important findings of the committee is that no standards exist by which the efficiency of a hospital may be measured. The operating expense of one institution may be $3 a day for each patient and that of another a little over $1. Is the latter figure a credit or a disgrace? One dispensary physician may treat twice as many patients in an afternoon as his colleagues working under the same conditions. Which one is accomplishing the more good? Standards of efficiency must be formulated and applied before such questions as these can be answered, the investigators declare.

Naturally, this lack of standards is reflected in chaotic conditions. For instance, the committee made a careful study of the record systems used in sixteen of the largest hospitals in Philadelphia. In eight of these some systematic effort was being made to secure the completeness and accuracy of the records, the chief resident physician or the registrar finally checking the records. Four different systems of classification were being used in these eight hospitals.

Only three of the sixteen hospitals were maintaining separate files for recording all operations performed in the hospital, grouping together all operations of like character, so that the number of all operations performed during a given period, with the results of each, could be be quickly ascertained. The committee states that in thirty-one per cent. of the hospitals visited, the records were so kept as to be useless for scientific purposes.

A number of recommendations are made for the improvement of record systems, the establishing of social service departments, the prevention of dispensary abuses, &c. The Journal of the American Medical Association is of the opinion that the report contains many valuable suggestions for those who are interested in the improvement of hospitals, and deserves to be widely read.
Hospital Reports.

Report of St. Elizabeth's Hospital of the American Church Mission, Shanghai, 1914.

HOSPITAL STAFF.

Physicians: Miss E. C. Fullerton, M.D.
Miss G. F. Alsop, M.D.

Trained Nurse: Miss L. E. Lenhart, B.A.

Evangelist: Miss A. A. Boone.

Visiting Staff and Instructor in Nurses' Training School: Miss A. M. Wong, M. D.

The hospital admits Hindoo and Japanese as well as Chinese. Only a few Japanese apply, but there is a considerable number of Hindoo women, the wives of Municipal police and watchmen, to whom no other hospital in town is open, and hardly a day passes without our seeing some of these women either in clinic or at the hospital. They are difficult to deal with as the language is a constant barrier, but they are often very badly in need of the care that we can give them.

For the past two years the hospital has admitted women from the Mixed Court prison who are in need of hospital treatment, and it is seldom that we are without several patients of this class. The City provides a wardress who is always on guard. The hospital also does a considerable amount of work in examining police cases who are sent up for medical certificates.

The main building has recently (1912) been enlarged by the erection of a three-story wing given in memory of Mrs. Proctor by her daughters. This has increased the total capacity of the hospital to eighty-five beds.

The third story of the annex is an open-air ward for tubercular cases. The north side of the room has a solid wall, but the other three sides are open arches, fitted with venetian blinds which can be lowered during bad weather. This ward has been unexpectedly popular and makes one hope that an educational campaign for better hygiene might not be entirely without results even in China.

For the school year of 1915-16, the hospital will hold clinics in obstetrics for the Senior Class of St. John's University Medical School. Clinics in major surgery and gynecology also will be given as material offers.
Hospital Reports.

Statistics for the year ending July 1st, 1914:

In-patients ........................................ 660
Out-patients: new cases ...................... 5,976
Returned cases .................................. 9,743

The total income for the year ending August 1st, 1914, was $12,180 (Mexican), of which $3,300 was from appropriation.

Report of Funing Men’s Hospital (Church Missionary Society), 1914. By Marcus Mackenzie, M.B., C.M.,

Dr. Mackenzie writes that “if more patients, more fees, more attention to the thing preached, more surgical operations and the establishing of self-support imply progress, then this hospital has cause to be thankful to the Giver of All for these visible signs of progress in 1914.” The statistics for the year are as follows:

Number of Beds ........................................... 93
In-patients ........................................... 1,702
Days in hospital ..................................... 15%
Out-patients (new) .................................. 3,200
subsequent visits ................................... 2,300
Operations under chloroform .................. 263
Days itinerating ...................................... 18

The income for the year was Mex. $2,653.70: the expenditure, Mex. $2,212 29. Dr. Mackenzie speaks of the great need of trained helpers, not necessarily qualified physicians, and has therefore undertaken the training of seven students. A typhoon of exceptional violence at the close of the summer damaged the hospital buildings. Three of the patients received minor injuries, and one old man was so badly injured that he died, but he was a Christian, “happy to go, full of hope and peace.” There is an interesting note on Demoniacal Possession to which reference is made in our “Notes and Comments.”

Report of the Kashing Hospital, Mid-China Mission of Southern Presbyterian Church (U.S.A.), 1914.

FOREIGN STAFF

W. H. VENABLE, M.D.  A. C. HUTCHESON, M.D.
MRS. W. H. VENABLE  MISS E. CORRIGAN, R.N.
MISS E. TALBOT, Evangelist.
MISS S. A. NISBET, Business Mgr.

Graduate Chinese Assistants; Mao Bah, M.D. Du Joh Fong, M.D.

The service rendered to the Chinese during the year, was as follows:

Cases treated in the Dispensary, approximately ........ 30,000
In-patients ........................................... 2,000
Operations under general anaesthesia .................. 700
Maternity Cases ....................................... 200
The many operations under general anaesthesia keep nearly all the doctors and nurses busy three mornings of the week, and make it necessary to run two operating rooms, often having three persons under ether at the same time. The surgical work covers a large field: stab and gunshot wounds inflicted by robbers; injuries by railroad, falls, buffaloes, family brawls; tuberculosis of bones, appendicitis, tumors, removal of spleen, abscess of liver, cancer of breast, many eye diseases, gall stones, hernia, skin grafting, etc., etc. Abscesses and ulcers are treated by the hundreds.

Dr. Venable reports that the hospital is moving steadily towards self-support as shown by the financial statement:

Total cost of running the hospital one year (including salaries of missionaries) $12,000.00 (gold)
Amount paid by Chinese $7,000.00
Balance paid by home church $5,000.00
Of this $5,000.00 balance, missionaries receive in salaries $4,000.00, and only $1,000.00 goes to the running expenses of the hospital.

Nurses' Association of China.

Miss L. LENHART, Editorial Secretary.

Futsing Hospital and Training School for Nurses.

Dear Miss Clark:—I have just returned from Futsing, where I had the privilege of examining six nurses for their final certificate after having been trained in Dr. Poulter's (C.M.S.) Hospital. Two of these women have been in the Hospital five years, the others only three, but I would put any one of them against any foreign trained nurse and guarantee that she would not be put to shame in any way.

The Hospital was opened fourteen years ago, and from the first Dr. Poulter and her nurse-colleague, Miss Leybourn, set their thoughts resolutely towards the endeavour to train Chinese women as nurses to go out and care for the sick among their own people. The story of early attempts and seeming failures is too long to be told here,—some of you may already know it,—but after eight years' work it seemed to Dr. Poulter and the English nurse as if there was nothing but discouragement to report. There was not one trained nurse to show for all the effort that had been made. But patience and perseverance, with steady prayerful work, won in time and at last some young women came who appeared to be more promising. Later, four promis-
ed and signed on to stay for three years and learn all they could in the
time of how to nurse the sick according to English ideas. They kept
their word faithfully, and needless to say the Doctor and Nurse kept
their word also, and put their heart into training these women, giving
them the best they could. At last, on February 8th of this year, the
first-fruits of their labours were happily shewn forth in the little func-
tion that was held for the presentation of certificates to the six nurses
who have finished their course and successfully passed their final
examinations.

The two senior nurses have also taken the extra year and now
hold a certificate for Operative Midwifery, and are able to be sent out
alone to difficult cases. The other four have as yet only taken normal
cases alone, but are hoping to stay on for the extra year for special
training in advanced obstetrics, which will no doubt make them a
great blessing to their suffering country-women when they can go out
to help them in their time of sore need.

The results of the examination showed that both teachers and
pupils had worked hard and diligently during the time of training.
The two seniors formed one class, and the four nurses taking the three
years' course another. Both classes were put through a very thorough
testing (oral and written) in Materia Medica and Therapeutics, the
nursing of medical and surgical cases, and in Obstetrics, Bandaging,
First-aid, Urine testing, etc. The answers were given readily, correctly
and intelligently, as if each nurse knew well what she was about, s<.
that in making out the mark list at the end of the examination, I was
not surprised to find that the percentage was high, and that the lowest
of all had obtained slightly over the 80% on the whole, and more than
50% in each subject, which is the standard required for high honours.

The general wards were very empty and work was slack for it was
the Chinese New Year, but the maternity wards were full, and as dur-
ing the five whole days that I was there, seven babies were born in the
hospital, I was able to obtain a very practical examination of the way the
nurses did their work. One case was a primipara, footling presentation, a
large child, early rupture of membranes, and many other complications
to add to the difficulties of extraction, but the two seniors managed it
beautifully with scarcely any assistance, and with no tear or other harm
to the mother. That the baby was dead was not their fault.

Never having taken such a decisive examination before, the poor
candidates were shaking in their shoes all the time until it was over,
and their relief and delight when the results were read out, were very
great. It was an exciting day for all when the certificates were given
in the presence of a few friends, in the decorated little Hospital Chapel. There were a few appropriate speeches, and of course the ubiquitous fire-crackers and the inevitable photographer, followed by tea and cakes in the foreigners' house for the staff and guests.

These nurses have passed well an examination quite up to the standard required by the Nurses Association of China, but of course all the written part was done in the Romanised colloquial. Most of them can read fluently a fair amount of Chinese character, but not one could write it sufficiently well to have put her answers so fully and clearly as they have been given this time in the Romanised. Names of diseases and drugs are taught and written in the usual English or Latin nomenclature, but the rest is all in the vernacular. This has the advantage of showing how much the candidates really know of their work. Each nurse has to write out for herself clear notes of every lecture she receives, each has to keep her own record-book of the obstetric cases she attends, and another for reports of patients when she takes her turn in the general wards. They are taught to read and make up prescriptions in ordinary handwriting and no one can say that the training in all branches is anything but thorough. The discipline, method, and systematic work done in this Hospital and Training School are grand, and the benefit and blessing to nurses and patients who in any way come under its influence, I am certain will be great and wide spreading. And with all the attention that is given to the care of sick bodies, the other half of the Hospital motto is kept well before them. Every worker in the place, from the foreign doctor and nurses to the smallest wardmaid or cleaner in the Institution, takes her share in giving the patients systematic teaching every afternoon in the wards, or on the wide verandah if the weather permits. The whole atmosphere is one of love and kindness thus witnessing daily to the fact that they are there to "Heal the sick and preach the Gospel."

I could write much more in praise of the work, but fear lack of space if I make this report much longer. I hope that room may be found for it in the Nurses' corner of the CHINA MEDICAL JOURNAL.

Yours sincerely,

K. S. Loader.

FOOCHOW CITY, February, 1915.
DIFFERENTIATION OF VARIOUS FORMS OF CARdio-renal DISEASE.

The physician is faced with few problems more difficult than the differentiation of the various forms of cardio-renal disease. It is obvious that three varieties of this condition may be met with, viz:

(a) Disease of the valves or musculature of the heart, followed by disease of the kidney.

(b) Arterio-sclerosis, followed by disease of the kidney.

(c) Primary disease of the kidneys, followed by cardiac and (or) vascular changes.

The differentiation of these conditions is of urgent importance from the point of view of treatment, as will be realised if one runs over in one's mind some of the symptoms of which the patient may make complaint. Dyspnoea, for example, may be due either to cardiac failure or to uraemia. In the former case one must stimulate the heart so as to improve the circulation through the lungs; in the latter one must promote the elimination of the toxin by purgatives, diaphoretics and, possibly, by bleeding. Again, we may find the patient stuporose, or even in a state of coma: are we to stimulate the heart with a view to preventing thrombosis? or are we, as in the previous case, to take measures directed against the uraemia?

An article on this subject by Professor Stengel which appeared in the Journal of the American Medical Association last year (Oct. 24th) has proved of so much help in answering these and similar questions that I feel justified, even at this late date, in submitting an abstract of it herewith. Some of the views expressed may not be in agreement with the teaching we received as students but, supported by the authority of Professor Stengel, they merit our most careful consideration.

In attempting to differentiate these conditions it may happen that the history of the illness will throw a little light upon the problem. We would suspect that the heart condition was primary if there was a history of severe illness followed by the occurrence of such symptoms as dyspnoea, oedema, palpitations, or arrhythmia; while if an attack of scarlet fever had preceded the present illness suspicion would naturally attach to the kidney.

Perhaps a mere glance at the patient may give a useful hint, for one may observe cyanosis or some other sign of venous stasis—a condition which is not met with in primary renal mischief.

But the differentiation will generally depend on the results of a careful examination of the two systems primarily concerned:

I. Circulatory System.

Percussion. If—to go back to one of the problems we suggested—the patient is suffering from dyspnoea, and the condition is primarily valvular, the heart will be enlarged to the right of the sternum, whereas if he is suffering from uraemia, the result of chronic interstitial nephritis, there will be no enlargement of the heart to the right.

Fig. 1. Showing the murmur of mitral incompetence when it is the result of valvular disease.
Auscultation. In a primary mitral incompetence the murmur may overshadow the first sound with which it is blended, as is described in the text-books and shown in Fig. I. If the incompetence is due to high tension from kidney disease, however, there will be an appreciable interval between the first sound and the beginning of the murmur, and this will be immediately followed (no interval) by the second sound (Fig. II).

Fig. II. Showing the murmur of mitral incompetence when it is the result of dilatation of the left ventricle from renal disease.

Blood Pressure. This will generally be low in primarily cardiac cases, even when a marked degree of renal disease has been super-added, while it is likely to remain high in primarily renal disease even when cardiac failure has advanced considerably. It is very suggestive of renal disease if, while the patient is under treatment, the systolic blood pressure falls from a high figure (say from 180 mm. to 140 or 130 mm.) while no change takes place in the diastolic pressure.

II. Urinary System.

The percentage of albumen in the urine and the number of casts and other cellular elements which it may contain are likely to vary somewhat from day to day in both groups of cases, but the amount of the variation will be greater in primarily cardiac cases than in those that are primarily renal.

Finally, Stengel urges that the phenol-sulphone-phthalein test of renal function will prove the most certain method of differentiating vascular and cardiac cases from those that are primarily renal.

This test has now approved itself to scientific workers in both hemispheres as the simplest and most accurate method of measuring the functional activity of the kidney. Unfortunately only a few of the more recent diagnostic handbooks give an adequate description of the application of the test, so it may be well to attempt to do so here.

Phenolsulphonephthalein Test. A standard solution is prepared as follows: .6gms of phenolsulphonephthalein are rubbed into a paste with 2 cc. of normal sodium hydrate, diluted with .75% sodium chloride solution till the product measures 100 cc. and then filtered. The dose of phenolsulphonephthalein is 6 milligrammes, i.e. 1 cc. of the standard solution. It is best administered by intramuscular injection (gluteal or lumbar region) though it may also be given subcutaneously or intravenously. The drug is harmless and is exclusively eliminated by the kidneys.

The directions are that just before the injection is given the patient should drink 200 to 400 cc. of water (about half a pint) so as to insure a free diuresis. The bladder is then emptied by a catheter, which is left in position. The injection is given and the time is noted.

The urine as it flows drains into a test tube containing a trace of 25% sodium hydrate solution. As soon as the urine contains any phenolsulphonephthalein, a pink colour will be produced by contact with the caustic soda and the time of this occurrence must be noted. The catheter may then be withdrawn and the patient directed to pass his urine into one receptacle (A) exactly one hour after the injection, and into a second one (B) at the end of another hour. To A is added the urine that had been collected in the test tube. Each of the specimens A and B is
Tropical Diseases.

then rendered alkaline with a drop or two of the 25% caustic soda and diluted to 1000 cc. A standard pink solution is prepared by adding 3 mgrs. of phenolsulphonephthalein to 1000 cc. of alkaline distilled water. According to the text books the determination of the amount of phenolsulphonephthalein that has been excreted is determined by comparing the tints of these three solutions with a colorimeter, but the price of Duboscq's instrument is over ten pounds sterling, and even the Autenrieth-Konigsberger instrument costs more than two pounds sterling, so they must be looked upon as luxuries rather than necessities in Mission Hospitals in China.

It will be found, however, that sufficient accuracy can be obtained by carefully diluting the stronger solution (which may be either the standard or the one that is being compared with it) till an equal bulk of the two shows the same tint. By measuring the degree of dilution required, the amount of phenolsulphonephthalein present can be determined. Nessler's tubes, which are used in this way in determining the amount of ammonia in water, can be recommended for this purpose; they are flat-bottomed and of uniform bore.

Results of applying the Test.

Under normal conditions it has been found that the time of the appearance of the drug varies between five and eleven minutes after the injection, and that 40% to 60% of the amount administered is excreted in the first hour, and 20% to 25% in the second hour.

In primarily cardiac cases, even when associated with a marked degree of renal stasis, 30% to 40% or even 50% will be eliminated in two hours, i.e. there is a certain amount of diminution in the amount excreted in that period.

In primarily renal cases there is a much greater diminution in the amount excreted in the two hours, which rarely exceeds 20%. There is equally marked delay in the elimination; sometimes less than 1% is passed in the first hour, and the amount for the second hour is generally greater than that for the first.

The test has many other applications—e.g. in cases of surgical disease of the kidney—but it is enough for our present purpose to emphasise that authorities in America, England, and the continent of Europe are agreed as to the extreme value of this simple test in differentiating primarily cardiac from primarily nephritic conditions.

Tropical Diseases.

The Treatment of Kala-azar. In the Indian Journal of Medical Research, April 1915, Leonard Rogers confirms the observation previously made by him that the alkalinity of the blood in kala-azar is commonly much reduced, and raises the practical question whether measures to increase the alkalinity are of value in the treatment of the disease. He states that while it is too early to dogmatise on this point, a number of clinical observations have been made by him, and although this line of treatment has completely failed in several advanced cases, yet in some earlier ones it was followed by reduction in the fever and increase in the leucocytes, accompanied by gain in weight, and decrease in the size of the spleen, while in three cases the parasites have also disappeared.
from the spleen. No more can be said until sufficient experience has been obtained to allow of reliable conclusions being drawn, but at the present moment this line of treatment promises to be of some value, in combination with other measures.

EXPERIMENTAL TRANSMISSION OF KALA-AZAR TO ANIMALS. As the result of a long series of experiments, Major F. P. Mackie, M.B., F.R.C.S., M.R.C.P., (Indian Journal of Medical Research, April, 1915), draws the following conclusions:

I. Monkeys, flying foxes, dogs, and white mice were found to be susceptible to the virus of Indian kala-azar when inoculated by the intra-peritoneal route.

II. The production of the disease in these animals is very uncertain, for though some experiments were successful, a number of others were unsuccessful even when identical doses of the same material were administered to animals of the same species. This means that any attempt to prove the infectivity of suspected material by animal experiment is apt to be fallacious.

III. Feeding experiments, using large quantities of freshly removed and highly infected spleen substance from human subjects, were uniformly negative.

IV. It is noteworthy that young cats, goats, and a young pig, (animals commonly living in close intimacy with human beings in Assam villages) were able to resist enormous doses of very virulent material by intra-peritoneal inoculation. These animals, therefore, may be considered naturally immune.

V. The microscopical examination of the spleen and bone-marrow of over 100 dogs selected from kala-azar villages, has not revealed the presence of Leishmania in any of them. The bone-marrow of 25 of these dogs was inoculated into monkeys and bats without result.

VI. As to the possible infectivity of the faeces of kala-azar patients, the intestinal mucus of many patients in various stages of the disease was administered orally to five monkeys and three dogs, but these animals did not develop kala-azar.

VII. The intestinal contents of 3,673 verminous insects caught on kala-azar patients were inoculated into eight monkeys, but none of these developed kala-azar.*

VIII. Material obtained from cutaneous ulcers occurring in kala-azar infected areas, has not proved to be infective to animals, nor were Leishmania discovered microscopically in such ulcers.

IX. The experiments detailed do not support the belief that any of the animals referred to are natural "reservoirs" of the virus of kala-azar. The most that can be said is that young dogs are more susceptible to experimental infection than any of the other animals which were used.

♦The author in a supplementary article on "Insects and Kala-azar," in the same Journal, gives details of his attempts to transmit kala-azar by means of body lice, head lice, bed bugs, sand-flies and mosquitoes, and obtaining a long series of negative results, thinks this will tend to check enthusiasm for the insect-borne hypothesis of kala-azar; but in view of the many fallacies and difficulties which surround an investigation of this sort, he states that it cannot be looked upon as anything but an introduction to a subject which requires an infinite amount of further investigation. The only insect which has given any return for work spent on it is the sand-fly, and he is of opinion that the relation of this insect to disease would repay further investigation.
During the past two years while examining diarrheal and dysenteric stools, I have noted in many cases a small, actively motile parasite of the amebic class—size approximately, 12 microns to 18 microns. Amebic dysentery being endemic in Huchow and outlying districts and not having satisfactorily classified the amebae here found, for my own convenience I charted my findings—"Histolytica," "Tetragena type," "actively motile form;" "spherical forms."

Recently, I have been enabled to devote some time to the study of the "actively motile form." I noted that some stools of the same patient contained small spherical parasites with amoeboid movement, while others showed actively motile flagellates. Not long after this observation I found an article "Craigiasis," by Nathan Barlow, which describes so accurately the morphology of the parasite I was then studying, that after following the organism through a number of cycles I became convinced that my case was one of paramoeba infection (Craigiasis). As far as I have been able to ascertain, this condition has not been hitherto reported as occurring in China.

In the five cases of the disease here briefly reported all the patients were foreign; at a later date I hope to offer a full report of cases both foreign and Chinese.

Symptomatology—Three cases gave a past history of dysentery with frequent stools containing blood and mucus, accompanied by pain and tenesmus; in two cases the first attack was diarrheal in character. Subsequent attacks are generally characterized by copious diarrheal stools, two to five daily, marked anorexia and malaise, with rapid emaciation and prostration; milder cases have only two or three stools daily, soft in character rather than diarrheal, with gradual loss of strength and weight. Patient complains of being weak, especially after dejection, which is often accompanied with slight nausea. If macroscopic blood is absent, patient suffers no pain nor is tenesmus present, the one characteristic being "weakness." Three cases yielded promptly to treatment; one has not been treated. The fifth case resisted all treatment until seven cycles of the organism had been completed. The patient being all but moribund, emetine and ipecac, were omitted. Gradually under treatment, while flagellates returned two weeks later and again caused diarrhea. At the present time two cases under observation have formed stools, microscopically negative; one case has been dismissed cured (?). The untreated case has one or two soft stools daily.

Treatment—If patient's condition is good, saline purge at outset. Emetin gr. 1 daily, in the morning, for eight to ten days if well borne; if pulse is markedly inhibited or accelerated by emetin, strychnine should guard it. If organisms do not disappear within two weeks, emetine should be stopped. Ipecac gr. xx. to x xv. daily at 11 p.m., morphine gr. ¼ having been injected half an hour previously. Ipecac and emetine must be given simultaneously. In my experience the paramoeba is far more resistant to emetine than is the histolytica. After ipecac has been discontinued, or in cases where it is contraindicated, kaolin, 3 ounces two to three, twice daily, at 5 p.m. and 12 p.m. has seemed very helpful. Magnesium sulphate, ½ ounce p. r. n., but at least once weekly. Chaparro Amargosa enemata (1 : 8,000), or normal saline given high, foot of bed raised two feet, is recommended to mechanically clear the colon. Diet, liberal, soft or solid, not liquid.

Technic for examination of parasites. Thin mounts are imperative. A small mass of fecal matter should be mixed with water till a slightly colored fluid is obtained. Of this a small drop should be taken thus making the layer under the cover glass very thin. No diarrheal stool should be pronounced negative until four or five slides have been examined. While flagellates may possibly be seen under two thirds objective with one inch eye piece, one sixth objective and one inch eye piece are necessary for the study of the parasites, thus giving some 400 diameters. Illumination must be very weak.

References:
The Council on Public Health of the C. M. M. A., has been fortunate in being able to make arrangements by which Dr. C. D. Barlow of Huchow, Che., will give part of his time to lecturing on public health and to the work of the Lantern Slide Exchange, as in addition to his other exceptional qualifications, he is a rapid, skilful artist and an expert photographer. His plea for the active co-operation of all able to assist him is sure to meet with a hearty response.

In connection with the editorial on "The Health of Missionaries," it is interesting to compare the symptoms of nervous overstrain in those resident in tropical climates who are not missionaries. As an example, a medical authority cites the case of "an officer, who otherwise in every way a good fellow, has become short tempered, forgetful of names, troubled with sleeplessness, given to feel his work too much for him, disinclined to take responsibility, given to make hills into mountains, procrastinating, susceptible on slight exertion to mental or physical fatigue, and with a loss of all power of concentration. In fact, an irritable man, more or less unequal to his work though otherwise fairly fit." And the man who can stand up against the trials of life in the tropics what are his qualities? The man wanted is one "with his head well screwed on, an even temper, not over intellectual, one who can take an interest in things around, not unduly introspective . . . capable of bearing exposure to the sun, one who will practise temperance in all things, with self-control and common-sense." Many are prepared to say that the last is the most desirable quality of all.

A certain drug firm in Shanghai is endeavoring to use missionaries to push the sale of its drugs and patent medicines. Letters are sent to them expressing the pleasure it would afford the firm "to get the addresses of Chinese merchants, medicine shops, sundry and piecegoods shops, Government officials, gentry, newspapers, etc." Forms are enclosed with the letter, and it is suggested that these might be passed on to pupils in the missionary school who could fill in the required names and addresses. A stamped addressed envelope is provided for the return of the forms. As a compensation for the trouble taken, the firm expresses its willingness to supply for mission purposes one Mexican dollar's worth of their chemicals, patent medicines, etc., in return for every 100 addresses supplied to them, and they courteously send their best thanks in anticipation.

It is further stated that the smallest hamlet, no matter how remote, is flooded with its posters, advertisements, etc., and samples of its patent medicines are distributed freely by its agents.

Of course medical missionaries will have little or nothing to do with a firm of this kind, but it may be well for them to advise lay colleagues who are inclined in their good nature to comply with the firm's requests, that such business methods are not in conformity with the ethical standards of the medical profession.

Under the heading, "Hysteria or Poison?" the correspondent of a Shanghai daily newspaper sends the following report of an unusual malady which seems to occur periodically in Hainan.
Notes and Comments.

"A peculiar disease is reported from the Vangueng district. The patient, according to native reports, is taken suddenly with hysteria, and this is followed by the contraction of some part of the body such as the nose, a finger, an eye, or the breast. A few cases are reported to have terminated fatally, while others have recovered through the efforts of friends who massaged the afflicted part."

In all probability, the condition is purely psychopathic, the few deaths, if they did actually occur, being due to some other disease. A report from a local physician who has examined several of these cases would be welcome.

In the Report of the Funing Men's Hospital of the Church Missionary Society recently issued, Dr. Marcus Mackenzie inserts a very interesting note on the subject of demoniacal possession. He states that as the best-trained workers of his mission, including doctors, clergy and catechists, believe in demoniacal possession, he asked a number of them to record their views and experiences in order to throw light, if possible, on this dark subject. Several of the replies are given in the Report and the incidents related are certainly very curious. For instance, a man of very hard disposition became possessed, and 'one night he had a great pain in his eyes and saw the devil hanging from a rope over his bed,' so he resolved immediately to commit suicide by hanging himself. He did not succeed as his good wife saved him. In another case the bed was shaken violently and became quite hot. Whether the heat was from the demon's own temperature or from some other cause is not stated. A catechist expresses the belief that "demons can speak, burn down houses, and steal food and money." It is also recorded that "the people believe that demons like to possess the bodies of foxes, and demons possessing men are also connected with foxes." This is akin to the belief in lycanthropy, or the superstition of the were wolf, formerly very common in other lands.

Separating these cases entirely from the cases of demoniacal possession recorded in the New Testament,—for there is no necessary connection between them, it is quite possible that psychic phenomena common two thousand years ago may not be present now,—surely this is a subject which should receive the unbiassed, scientific examination of men competent by their training to undertake such work. As to the genuineness of the belief of the Chinese in demoniacal possession there can be no doubt, and therein lies the weakness of their evidence. Where scepticism exists, there demoniacal possession has disappeared. If such a malady existed at the present time in Western lands, the unfortunate sufferers would not be given their liberty but would be confined in institutions, yet in all the institutions for the care of the feeble minded and insane we rarely or never find cases described as demoniacal possession. But to return to these Chinese cases. If a demon, apart from all physical agency, is able to shake a bed or raise its temperature, it ought to be easy to place such strange facts beyond all cavil. If a demon can only produce such effects by working in and through a human being, then other questions are raised. When a demon induces a subject to steal or to burn houses, what is the difference between the impulsion to such acts, and those due to kleptomania and pyromania? Unfortunately, in this Report there are the statements of the Chinese only, of men unaccustomed to scientific observation. Dr. Mackenzie frankly confesses that "personally I have not seen a case," but adds, "I do not doubt the probability of such a condition." The book on this subject written some years ago by Dr. Nevius has the same radical weakness as it contains no scientific personal observations of his own.
That queer, almost inexplicable incidents occur among superstitions people unaffected by Western civilisation we do not deny; indeed, it may be said that the longer a Westerner lives among them, the more inclined he is to believe in the supernatural. We are quite prepared to admit that there are more things in heaven and earth than are dreamt of in our philosophy. For example, a few years ago there was published in "The Lancet" an account of the strange experiences of an Englishman, Captain Welby, who started to explore certain out of the way places in the heart of Abyssinia. Entering the Walamo district, his Somali and Soudanese followers were in a state of fear and perturbation, because of the evil influences which the Walamos were believed to possess. According to his narrative, "It is supposed to be especially dangerous to eat food in the presence of the Walamo people. On one occasion one of my Soudanese saw a Walamo gazing intently upon him while he was having his meal. Nothing untoward occurred at the time, but two days later the man became a raving lunatic." Others of the retinue were similarly afflicted, and the captain was obliged to devise means to check the spread of the disorder. "Thinking I could perhaps do something to explain these extraordinary occurrences, I resolved to eat solemnly a meal in the presence of the Walamo myself. When all was prepared, I had something like a hundred of these people watching me. In due time the meal was over, and I thought no more about it. Here I should state that I had not had a day's illness during the journey, and was in the best of health at the time. The next day, however, I felt thoroughly ill. Needless to say I did not let any of my people know that anything was wrong, nor can I attempt to explain the cause. I was quite unable to find a cause for this mysterious business. I merely confine myself to a bare statement of facts. It was an anxious time for me, as I did not know whether at any moment the whole camp might not become 'Walamo.'"

The editor of "The Lancet," in commenting on the narrative, observes, "As for explanation, so far as we can see there is none. Emotion and a consciousness of the evil reputation of the country might possibly explain the occurrence in the case of the Somali and the Soudanese, but this explanation would hardly hold in the case of an avowed unbeliever like Captain Welby." Nevertheless, one would like to be assured that it was absolutely impossible for the Walamos to have tampered with the food of the explorer and his followers.

It would be doing good service, and incidentally furnish interesting material for the JOURNAL, if more of our workers would follow the lead of Dr. Mackenzie and publicly report all the strange incidents, beliefs, and customs which come within their ken. Yet we plead at the same time that all such matter should be scientifically investigated as far as possible, and that merely hearsay evidence should be reduced to the minimum.

Each of the papers on Public Health which appeared in the July issue of the JOURNAL should have been accompanied by the statement that it had been read at the Biennial Conference of the China Medical Missionary Association held in Shanghai, February, 1915. It was omitted by an oversight which is regretted.

Dr. Bernard E. Read, whose "Materia Medica Notes" were reviewed in the same number, writes that the price, which had not been given, is forty cents for a single copy, with four cents for postage.
THE DIAGNOSTICS AND TREATMENT OF TROPICAL DISEASES, by E. R. Stitt, M.D., Head of Dept. of Tropical Medicine, U.S. Naval Medical School; Prof. of Tropical Medicine, Georgetown University, etc., Eighty-six illustrations, 421 pages. Philadelphia, P. Blakiston’s Son & Co. 1914. Price $2.00.

This very handy little book is a companion volume to the same author’s book on Practical Bacteriology, Blood Work and Animal Parasitology, the two together forming a very valuable addition to the library of any medical man working in tropical countries. Although quite small, it contains all the main points necessary for a thorough knowledge of tropical diseases. The arrangement is very good, each disease being considered by itself completely. For example, in the case of a disease caused by a parasite, there is given a complete description of the parasite, its life-history, mode of transmission, together with the symptoms caused by the parasite, and the treatment of the disease.

A great deal of space is saved by the introduction of paragraphs in small type, and by the judicious selection of material. As the author says in his preface, “In a book so condensed it has not seemed advisable to present any subject not of practical value.” There are charts showing the geographical distribution of many of the diseases. The illustrations are very good, several of them being taken from Jeffery’s and Maxwell’s book on “The Diseases of China.”

Part II is devoted to the diagnostics of tropical diseases, according to the signs or symptoms dependent on anatomical or clinical groupings. Here are presented the blood findings, etc., of certain conditions constituting a group of the diseases under consideration. In this section some very clear and useful charts are also found, showing the ova of parasitic worms all drawn to scale, and bringing out the differences in them very plainly.

For a book of its size it is hard to see how it could be bettered, and it is one that can be well recommended to medical workers in China, particularly to those stationed along the Yangtse valley and to the south.

H. H. M.


In this edition of the Directory, which has just been issued, the compilers’ aim to make it an indispensable guide for all who are interested in the education of the Chinese may be said to have been attained. The
book is divided into three parts. The first part consists of articles which bear on education generally, such as a review of the educational work of the year; valuable information relating to university, medical, theological, technical, and agricultural education; the education of Chinese girls and women, of foreign children, of the blind; the Report of the Rockefeller Commission; particulars concerning educational unions, societies, and organizations. Part II. is a directory of teachers, and Part III. is a list of schools, colleges, universities, medical schools, etc., arranged according to provinces, with the names of the teachers and other information.

The work is so good that it seems ungracious to criticize, but we venture to suggest a few improvements. Here and there, the material might be more systematically arranged. For instance, under the heading "University Education" the names only are given of the following institutions: Boone University, Wuchang, Peking University, University of Nanking, West China Union University, and Soochow University. At the least there should be cross-references to where the information relating to these institutions can be found. So with "Medical Education." Under this title no mention is made of the Medical School of St. John's University though the information can be found elsewhere. Here also a cross-reference would be useful. Further, while it is granted that the editors have a perfect right to limit the scope of the work as they please by including only "particulars of schools, colleges, and universities in which the English language is either taught or used as a medium of instruction," as a handy and never-failing book of reference we think its value would be enhanced if it mentioned such institutions under foreign control as the Tsinanfu Medical School. A fuller index to the whole work is also desirable.

The present edition, however, as compared with the first, is a distinct improvement, and it rests with teachers and others to co-operate with the editors in making the next edition as nearly perfect as possible. The Directory should certainly be in the possession of all who are engaged or interested in the education of the Chinese.

E. M. M.


This book is the warm-hearted tribute of a friend and colleague to the memory of one of the best and bravest of missionaries, and all who knew Booth, either personally or by report, should possess this history of his life and work.
He was born in Ireland in the year 1873, and was early consecrated to the service of God by his earnest Christian parents. The father had been nurtured in the Protestant Episcopal Church, the mother had been brought up a strict Presbyterian, and both eventually became Methodists, so that the family must always have been interested in questions concerning Christian unity. After a sound academic education Booth studied medicine, graduating with first class honors and winning an exhibition in the Royal University of Ireland.

It was during a visit of Mr. Polhill-Turner of the China Inland Mission, one of the "Cambridge Seven," who stirred the whole of England so deeply on the subject of foreign missions in the "eighties," that Booth received his first call to the mission field. About the same time the Christian Endeavor Society was raising funds to support a missionary of its own in the foreign field. Booth was selected as its representative as he had always been keenly interested in the work of this society. Later, he became acquainted with Dr. Hodge of Hankow and was persuaded to become his colleague in the medical work which had been established by the Methodist Mission some years before in the native city of Hankow.

Arriving in China in 1899, Booth soon became acquainted with the perilous side of missionary life in China. In the following year occurred the terrible Boxer uprising when so many missionaries were attacked and severely injured by infuriated mobs, and not a few received the crown of martyrdom. As many of the former passed through Hankow on their way to Shanghai, Booth saw much of the sufferings of the injured missionaries. It was a trying ordeal for him to pass through but his Christian faith and love never wavered. Nothing but a great pity was felt by him for the poor misguided people.

At the end of his brief missionary career Booth rendered most valuable service during another political upheaval, the Revolution which began in Wuchang in 1911. He was Vice-president of the local Red Cross Association which was rapidly organized to care for the wounded of both sides in the struggle. In his own hospital, and later in the hospitals of the Hankow concession, he had the charge of many wounded soldiers. The most thrilling incidents of those exciting days occurred when the city of Hankow was burned down as a military measure. The present writer was in Wuchang at the time and will never forget the awful sight. For nearly three miles there was an almost unbroken sea of flame which rolled steadily onward for two or three days so that onlookers feared that not a solitary house in Hankow would be left standing. While
The China Medical Journal.

the city was in flames there came a report to the little group of missionaries in Wuchang that Booth's Hospital and the adjoining School for the Blind, were in imminent danger of being burned with all their inmates. One of the group of missionaries, usually self-restrained, burst into tears exclaiming, "I cannot stand it." All quietly knelt in prayer and arose strengthened, and feeling sure that somehow or other all would be well. The desperate attempts made by Booth and his friends to rescue the patients and the inmates of the Blind Asylum are vividly described by Dr. Tatchell in the biography. All were saved as if by a miracle.

Booth's surgical and medical attainments were of a high order. With the aid of his colleagues he maintained the position of the hospital which it had early won under Dr. Hodge, of being one of the best managed in the whole of China. He was greatly interested in the medical education of the Chinese, and did all in his power to establish a medical school in Hankow where the education would be given in a Christian atmosphere. As a man, as an Irishman, he was very human and very lovable. He did not always agree with everybody on every conceivable question,—he would not have been an Irishman if he had done so,—but he was so kindly, straightforward and true that differences of opinion left no soreness afterward. To all who knew him the news of his early and quite unexpected death came with a deep sense of personal loss. We sincerely join in the hope that "the reading of this brief biography will stimulate fresh interest in the missionary cause for which Booth lived and died."

E M. M.

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Correspondence.

Artificial Limbs.

To the Editor of the Journal.

Dear Sir:—Please inform me where I can buy artificial limbs at reasonable prices. Do any of the missions or hospitals furnish them?

Thanking you in advance,
Yours sincerely,
O. V. Brubaker.
Liaochou Shansi.

[We shall be obliged if some of our readers will give the information desired.—Ed.]

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Urgent Medical Needs of Korean Women.

To the Editor of the Journal.

Dear Sir:—In an article contributed by a Japanese midwife to a monthly Japanese magazine published in Seoul, a harrowing picture is drawn of the many deaths among Korean women resulting from the lack of proper medical attendance. The whole of the contents of the article had better be left to the imagination, for it describes too vividly for pleasant reading the horrors suffered by unfortunate Korean women during labour on account of their superstition, the primitive knowledge of sanitation.
possessed by them and their relatives, and their dislike to be attended by male physicians. The article forcibly brings home once more to our minds the urgent necessity of providing Korean women with as many well-trained midwives, nurses, and female physicians as possible in the shortest possible time.

The Women's Department of the Foreign Medical Mission has been doing for many years past excellent work for the women of Korea, and in recent years the Government has been putting forth great efforts to train midwives and nurses, and has already completed the training of a considerable number. There are also a few female Korean physicians with modern medical education, and some Korean girls are preparing themselves for the profession. All these, however, are still incomparably few in number as against the great and urgent need felt throughout the country, and it is to be hoped that before long a sufficient number of fully trained midwives and nurses will be available.

We can only hope that that day will arrive soon. It is also to be hoped that principals and teachers in both private and government or public schools for Korean girls, will encourage students having a liking for natural sciences to qualify themselves for medicine. As for midwives and nurses, as already said, many are now being trained in provincial Charity Hospitals and it will not be long before Chosen possesses a fair number of these indispensable workers.

ROSETTA S. HALL, M.D.

Pyong Yang, Korea.

Dr. Score-Brown (of Ningpo) under Fire.

86th Field Ambulance,
20th Division, B.E., Force,
May 15, 1915.

MY DEAR COLE.—Since I last wrote I have had the exciting experience of being in action. I have been temporarily attached to the 3rd Middlesex Regiment and we went into action a week ago. We were three days in the trenches, and afterwards were sent back to the reserve line and were again called up to reinforce in daylight. I had several narrow shaves from shells and bullets. One shell which burst amongst me and my orderlies, killed two, wounded one through the lungs, and knocked the sergeant and myself down. The haversack, which I was wearing, is pierced with shrapnel, as are the contents. All of us had narrow escapes, and we had over 350 casualties out of 700. One regiment went into the trenches 900 strong, and came out with only 90. It is the shelling that does it, nearly over 350 casualties out of 700. One regiment went into the trenches 900 strong, and came out with only 90. It is the shelling that does it, nearly all shrapnel wounds. It is awful coping with the rush of wounded during an action and we use morphia freely.

At the time of writing we are in fairly comfortable billets, but when in the trenches we are never out of our clothes, sleep when we can snatch it, and eat anything that happens to turn up. Often there are 24 hours between each meal. Shells and shrapnel are always, night and day, bursting round us if we are within two miles of the Germans. It is quite true they use gases, for I have seen cases and also felt the effects of the gases at a distance myself.

Our men do splendidly, and especially the stretcher-bearers, who collect the wounded under shell fire.

Yours sincerely,

B. SCORE-BROWN.
PERSONALIA.

BIRTHS.

TUCKER.—On June 27th, 1915, to Dr. and Mrs. F. F. Tucker, A.B.C.F.M., Peitaho, a son (Francis Carlile).

PATTERSON.—On July 14th, at Kuling, to Dr. and Mrs. J. Lee H. Paterson of the London Mission, Tsao-shih, Hupeh, a son (John Hamilton).

BRUBAKER.—On July 17th, 1915, to Dr. and Mrs. O. G. Brubaker, Liaochou, Shansi, a daughter (Winifred E.).

ARRIVALS.

Dr. H. S. Houghton of the Harvard Medical School, after a brief visit to the States, arrived in Shanghai on July 27th, 1915.

DEPARTURES.

On June 26th, 1915, by s.s. Manchuria, Dr. J. A. Snell and family of Soochow; Dr. N. S. Hopkins and family of Peking; Dr. J. E. Gossard and family of Yenping-fu; Dr. Mary Stone of Kiukiang; Dr. Ascham of Harvard Medical School, Shanghai.

On June 28th, 1915, by s.s. Karmala, Dr. Arthur F. Cole and family of Ningpo.

Dr. Andrew Wight of the English Presbyterian Mission, Chao-chow-fu, is now in charge of a hospital in France.

Dr. E. S. Sowerby (brother of Mr. Sowerby the eminent naturalist) former physician of Bristol Infirmary, and now connected with the medical mission of Sianfu, has been accepted for active service, and is now on his way to the coast. We wish Dr. Sowerby every success and a safe return.—"China Times."

News has been received from Dr. C. F. Strange, of the Church Missionary Society’s Hospital at Hangchow, who went home this spring with a recommendation from the British Minister at Peking, that he was granted a commission in the R.A.M.C. immediately on reaching home, and is now in charge of a large surgical ward at the Connaught Hospital, Aldershot. There are about 1,500 beds in this hospital. One day, Dr. Strange reports, 120 cases arrived direct from the front, mostly shrapnel wounds. There is much operating to be done, but the men generally do well and are made fit for further service.

A telegram has been received from Dr. E. L. Marsh, stating that he has accepted a special temporary commission and will leave England for France on August 5, to join the staff of Sir Almroth Wright.—N. C. Daily News.

NOTICE.

Shanghai Museum.

Frogs and newts, snakes, lizards, tortoises, are wanted for the Museum. If you are willing to help, please keep a big wide-mouthed closely-covered bottle containing 75% alcohol (or strong samshu) for dropping such specimens into. Towards the end of the year place the specimens in a tobacco or grocer’s tin just wrapped in a piece of cloth moist with strong alcohol, and send by Parcel Post. A few notes as to where found, etc., will increase the value of the gift. Out of pocket expenses will be gratefully paid on receipt of particulars.

ARTHUR STANLEY, Curator.