The Treatment of Kala Azar by Stibosan (Heyden 471) and Antimosan (Heyden 661)

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In an effort to find an antimony preparation for use in protozoal diseases which would be less toxic than tartar emetic, the Chemische Fabrik von Heyden had as early as 1916 prepared an organic preparation of antimony, Stibenyl, which was only one-tenth as toxic as the antimony tartrates. Reports on the successful use of this preparation, in the treatment of Kala-Azar, were published in Italy and England. Reports from India, however, were not very favorable, and it has never been widely used in China.

More recently the same enterprising firm have prepared two other organic compounds of antimony; viz. Stibosan and Antimosan. Samples have kindly been sent to me by the firm in Dresden, and the present report is based on our experience with these drugs during the past few months.

Stibosan (Heyden 471). This is meta-chlor-para-acetyl-amino-phenyl Stibiate of Sodium, an organic preparation containing 31% antimony. It is a light brown powder readily soluble in distilled water. The drug dissolved in distilled water is injected intravenously in the same manner as are other antimony preparations.

In the Indian Medical Gazette, Dec. 1923, Dr. Napier reported favorably on its use in 11 cases of Kala-azar. In this series there was but one death and that was a patient who was seriously ill on admission. Dr. Napier subsequently adopted Stibosan as the routine treatment for all Kala-azar admissions. He suggested 0.4 grams as a maximum dose for an adult of 100 lbs, the dose for children being proportionate to

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this; and found that, by giving a first dose of 0.2 gm. and subsequent
dose of 0.3 gm. on alternate days, the course could be completed in
19 days.

Two years ago we had favorable results with Stibosan and
Antimossan, and found the former the more effective. As only a few
patients were treated throughout with these drugs, it was decided to
make further test and this time seven patients were treated with
Stibosan. In practically every case, recovery was rapid, and was
accompanied by the usual diminution in the size of the spleen. More­
over reactions were rare, even in severe cases; so that this drug is
of value in the treatment of Kala-azar, far surpassing the antimony
tartrates hitherto employed.

In the treatment of the following cases we usually began with an
initial dose of 0.05 gm., giving three injections a week, and gradually
increasing the dose until 0.2 gm. was reached. This maximum dose
was maintained as long as no reactions or unfavorable symptoms
developed. We do not believe that, as a rule, it is advisable to go
beyond a maximum of 0.2 gm., as this is sufficient to cure most
patients.

A table has been prepared to show at a glance the condition of the
patients in this series, on admission, discharge and return. Facts of
special interest in regard to these patients are presented below.

1. K. A. 316, F. 1229, admitted Mar. 15/26. This patient at first received
10 injections of Sodium Antimony Thioglycollate; the spleen, however, remained
approximately the same size and the temperature variable. So far as we could
tell, the drug had no favorable action on the disease. That it did cause toxic
symptoms was evidenced by the swelling of glands in the neck, and pain in the
neck and throat.

Stibosan was then begun and the patient made a satisfactory recovery,
with a fall in temperature after the second injection, and diminution in size of the
spleen from 15 cm. to 7.5 cm. from the rib margin. 16 injections were given
in 36 days; total dose 2.38 gm. Discharged cured.

2. K. A. 317, F. 1405. Admitted Apr. 15/26, in poor condition with
numerous pustules on the face. Improved rapidly. Duration of treatment 40
days. No reactions. Spleen reduced 12.5 cm. to 8.5 cm. Cured.

3. K. A. 318, F. 1463. Admitted Apr. 27/26. This patient made very
good progress, especially in his general condition. Increase in weight 9½ lbs.
Spleen reduced 14 to 10 cm. Liver puncture negative. Received 18 injections in
44 days. Total dose 2.6 gm. We advised him to go home for a month. On his
return 5 weeks later, he reported that he was very well. Spleen had further
receded from 10 to 7 cm. from the rib margin. Complement fixation test shows
complete hemolysis.

We supposed this patient had been cured, but he returned five and a half
months after discharge. Within two months the spleen had begun to increase
in size; his gums bled easily, and he felt that he was losing strength. He had
lost 7 pounds in weight. He was not having any fever when readmitted. The spleen was 14 cm. from the rib margin. A liver puncture was negative but Leishman-donovan bodies were found by spleen puncture.

He was treated on Dr. Morgan’s service. A total of 3.53 gm. of Stibosan was given in 55 days. On discharge the spleen was 5 cm. from the rib margin, Hb. 65 R.B.C. 3,800,000 W.B.C. 9000 whereas on readmission they had been 65, 3,600,000, 6,200, respectively. A spleen puncture was negative.

He was discharged on Jan. 22, 1927, and instructed to return in two months.

4. K. A. 319, F. 1443. Admitted Apr. 22/26, with general anasarca; the swelling of face and legs was considerable. A very advanced case, with severe anemia, whose recovery seemed very unlikely. On Apr. 24th he had a severe intestinal haemorrhage. On the 29th he was feeling somewhat better and looked as if he was reacting favorably to the drug; there was moreover no sign of any reaction following the injections.

He made a remarkable recovery. His face lost the “puffy” sickly appearance it had had on admission. The hemoglobin increased from 26 to 60%. After he had received 16 injections (2.32 gm.), given over a period of 41 days, the spleen was 9 cm. instead of 17 cm. from the rib margin; the liver puncture was negative. He was advised to go home for a month. On his return he appeared considerably improved. The hemoglobin had increased from 60% to 80%, and he had gained over 7 lbs. in the month.

5. K. A. 320, F. 1319. Admitted Apr. 1/26, a fairly severe case. After the 12th injection temperature rose to 104°—rales in chest—injections stopped for a week. Developed otitis media. Spleen receded 19 to 8.5 cm. from rib margin. Duration of treatment 44 days. Gained 6 lbs. Probably cured. Well 6 months later.

6. K. A. 324, F. 1464. A boy of ten years of age, whose general condition improved considerably, but the reduction in size of spleen was only from 22 cm. to 17 cm. On the 45th day the 18th injection was given (total 0.98 gm.); the next day glands in the left side of his neck became swollen, and the temperature rose to 103.6 degrees F. Injections were stopped (making the duration of treatment 44 days) and when the temperature had fallen the child was sent home with his father who had also been treated with Stibosan (number 3 of this series).

Five weeks later (July 21/26) he returned looking very well. The spleen had receded in the 5 weeks from 17 cm. to 10 cm. from the rib margin. The complement fixation test showed complete hemolysis.

7. K. A. 326, F. 1468. A boy 9 years of age, admitted Apr. 27/26. He had a very large spleen extending 21 cm. from the rib margin, almost filling his abdomen. Two days after the first injection several urticarial spots appeared on his face. These disappeared and the injections were continued with very satisfactory improvement in the condition of the patient. Two days after the 7th injection, three urticarial spots appeared on the left, and one on the right cheek. The 8th injection (total dose 0.58 gm.) which was given on the 22nd day was followed by severe urticaria of the face with a rise of temperature up to 103° F. He also developed tenderness and enlargement of the glands on the right side of the neck, whether as an evidence of the toxic action of the drug, or a streptococcic invasion from the throat was not certain. He then complained of abdominal pain and for two days continued to vomit all fluids taken. The spleen was
tender and a friction sound could be heard over it. The pulse became weak and very rapid, and death followed. Immediately after death spleen puncture showed the presence of a large quantity of pus. There was also pus in the peritoneal cavity. The cultures from both samples of pus showed hemolytic streptococci.

We have since had cases in which urticaria followed the injection of an antimony preparation, and have always changed to some other preparation with no further occurrences of the urticaria.

In each of the above cases the liver puncture was positive for Leishman-donovan bodies on admission. Apart from clinical evidences of cure, a negative result from liver or spleen puncture was required as a routine before treatment was stopped.

Dr. Ewers of Weihsien reports that in his Kala-azar clinic he is having excellent results with Stibosan. He has had some remarkable cures.

Antimosan (Heyden 661); a complex salt containing 12.5% Antimony. This is not so potent a drug as Stibosan; it can however be given to debilitated patients, and so is of definite value in treatment. It has also been found of value in combination with other drugs; when, for example, reactions occur with other drugs, it has often been found possible to inject Antimosan without any reaction, and with definite benefit.

We have tried treating 10 patients with this drug alone, and although they made definite progress toward recovery, the temperature kept up several weeks (3 to 6) longer than when Stibosan was used. A number of these cases have since relapsed. In our experience, Stibosan is more successful than Antimosan in the routine treatment of Kala-azar patients.

We have had one very remarkable recovery following the use of Antimosan. On May 15/26, a boy of 7, weighing 42 lbs, who had been ill 10 months, was admitted with a very severe cancrum oris of the right cheek of 4 days duration. The whole cheek was swollen so that it was impossible for him to see out of his right eye. He was only partially conscious, and unable to talk or feed himself. Temp. 101 to 103 degrees F. Pulse 120. Full doses 1 c.c. (5% sol.), 1.5 c.c., 2 c.c. were injected on 3 successive days following admission.

All other Kala-azar patients that we have admitted in a similar condition have died and it was realized that, in the ordinary course of events, he had only two or three days to live.

After the 2nd injection he was able to talk. The swelling of the cheek had, however, increased, and the mucous membrane had become necrotic and sloughed away. In addition to the gangrenous area on the cheek, the tips of the roots of two teeth were left exposed.
### Treatment of Kala Azar

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Age and Sex</th>
<th>Duration of symptoms in months</th>
<th>Spleen-distance below right margin in cm.</th>
<th>Blood Picture</th>
<th>No. of injections of Stibosan</th>
<th>Total dose</th>
<th>Duration of treatment days</th>
<th>Increase or decrease in weight in lb.</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>4</td>
<td>15</td>
<td>58</td>
<td>2320000</td>
<td>1800</td>
<td>16</td>
<td>2.3 gm.</td>
<td>Cured</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>19</td>
<td>48</td>
<td>12.5</td>
<td>36</td>
<td>2180000</td>
<td>3200</td>
<td>2.34 gm.</td>
<td>Cured</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>40</td>
<td>12</td>
<td>50</td>
<td>3240000</td>
<td>2750</td>
<td>18</td>
<td>2.6 gm.</td>
<td>Relieved</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>32</td>
<td>17</td>
<td>20</td>
<td>1800000</td>
<td>4700</td>
<td>16</td>
<td>2.3 gm.</td>
<td>Cured</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>20</td>
<td>8</td>
<td>18</td>
<td>2010000</td>
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<td>18</td>
<td>2.6 gm.</td>
<td>Cured</td>
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<tr>
<td>6</td>
<td>M</td>
<td>10</td>
<td>22</td>
<td>47</td>
<td>2880000</td>
<td>3200</td>
<td>15</td>
<td>0.98 gm.</td>
<td>Cured</td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>9</td>
<td>10</td>
<td>51</td>
<td>2790000</td>
<td>2000</td>
<td>2</td>
<td>0.58 gm.</td>
<td>Died</td>
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</table>
On the morning of the 4th day the temperature was 102.8 degrees F. and there was slight delirium. This day, the 3rd injection was given and the temperature fell two degrees F. The next day the patient's general condition showed a remarkable improvement, and he was able to sit up. The swelling in the face had decreased so that he could open his eye. In a few days he was out of bed and running around the ward. 40 days after admission, July 3, he was sent home for a month as a case which had probably been cured.

CONCLUSIONS

Stibosan. In a series of seven Kala-azar patients treated with Stibosan there was one death.

Stibosan is a valuable addition to the organic preparations of antimony for the treatment of Kala-azar. Its toxicity is much less than that of the antimony tartrates.

The average duration of treatment in six cases was six weeks.

Antimosan. Antimosan has a very low toxicity and may consequently be used with very debilitated patients. It is especially of value when used in conjunction with another drug. The time required to effect a complete cure with this drug is much longer than when other organic preparations of antimony are used, and relapses are more frequent.

Stibosan is more useful for the routine treatment of Kala-azar patients.

DISCUSSION

Dr. C. U. Lee, Peking. The treatment of Kala-azar with tartar emetic or Sod. Ant. Tart is a tedious business and sometimes very unsatisfactory. The search for a more efficient drug is important and urgent.

We have also been trying some of the new antimony compounds here in Peking but so far our series is very small—not over a dozen.

With V. Heyden "471" we have had a few cases, in which marked toxic symptoms were induced by the drug by way of marked renal irritation, abdominal cramps and in one case eruption of herpes zoster. In another case a patient after receiving a full course of V. Heyden "471" showed L. D. bodies on spleen puncture and his final cure was brought about by Sod. Ant. Tart. While these results are discouraging, they should not deter us from going on with further trials.

V. Heyden "661" we only had the opportunity of trying on two cases, one of which showed improvement on discharge but has since been lost sight of, while the other developed marked herpes zoster just after the course of treatment.

With Sod. Ant. Thioglycollamide, we had one case, which showed marked antimony poisoning and another in which the drug had to be discontinued on account of the fact that every time the drug was injected intravenously the vein became thrombosed.
Pentavalent Compounds of Antimony

J. H. Wylie. In the treatment of Cancrum Oris we use:

a. 1% Potass. Perman. irrigation every 1-2 hours.

b. 1-2% silver nitrate applied 3 to 4 times per day.

c. Constant applications of warm applications over the involved area.

This treatment has without doubt given good results and lessened our mortality during the past 2 to 3 years.

Does the injection of antimony tend to cause Cancrum Oris?

What effect on the diarrhea of Kala-azar have the two drugs?

Dr. Yates. We have used acriflavine intravenously in about seven cases.

1 case received 150 c.c. of a 1% solution and 450 c.c. of a 2% solution over two month’s time, with no apparent results. His W.B.C. count was practically the same after treatment and liver puncture was still positive for L. D. bodies. Six other cases were given up to 150 c.c. of a 2% solution with no benefit, liver puncture still positive and leucopenia still present.

Dr. E. deVries says that he was able to examine the central nervous system of a patient, who died of broncho-pneumonia (?) and herpes zoster, following Kala-azar, treated with sodium antimony tartrate. The changes in nervous tissue and meninges were inflammatory, and not degenerative in nature, as would have been expected in drug poisoning, so that he thinks that here the direct cause of the herpes is not the drug.

THE PENTAVALENT COMPOUNDS OF ANTIMONY IN THE TREATMENT OF KALA-AZAR

1. Stibosan (Von Heyden 271); An analysis of the Results of the Treatment of the first 104 cases

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Kala-azar Research Worker, Calcutta School of Tropical Medicine

All those engaged in the treatment of Kala-azar patients will be interested in an article by L. E. Napier in the October number of the Indian Journal of Medical Research, "The Pentavalent Compounds of Antimony in the Treatment of Kala-azar." 1. Stibosan (Van Heyden 471): An analysis of the results of the treatment of the first 104 cases.

This valuable paper is the best contribution published on the use of Stibosan, and should be read in full. For those who are unable to see that journal, the following sentences are of special interest.

Relative Toxicity. "The minimal lethal dose of Stibosan in mice is about 9 times as great as that of sodium antimony tartrate."

The Diagnosis. "The diagnosis was made by the demonstration of the presence of the parasite, either by direct examination or by cultural methods, in spleen, liver or peripheral blood. In a few
instances a spleen or liver puncture was done during the course of treatment, and, with few exceptions, in every instance before discharge."

Proof of Cure. "It is unfortunate that Kala-azar is a disease in which it is almost impossible at any given stage to ascertain whether or not the patient requires further treatment."

Dr. Napier then recounts the difficulties experienced in determining when a patient is cured, and mentions that a patient with a negative spleen puncture after treatment may relapse. He also mentions a case in which, though parasites were recovered from the spleen and no further antimony treatment was given, the patient recovered and was well 3 years later.

He says:—"In view of these facts, I have adopted the system of not assuming that a patient is cured until I have ascertained that he has remained in perfect health for a period of at least 6 months."

He does not believe that patients who return for treatment become reinfected, as, in his experience, symptoms of the disease have been thoroughly established by the third month after the discontinuance of the treatment.

Dosage. "Doses up to 0.5 gramme have been given to an adult without producing any toxic symptoms. Doses up to 0.3 gramme practically never produce any toxic symptoms in an adult; children weighing 40 to 50 lbs. easily tolerate 0.2 gramme and infants from 20 to 25 lbs. 0.1 gramme. Only two patients in this series would not tolerate full doses; in both instances the patients were adults who vomited when more than 0.15 gramme was given."

"I now give 0.2 gramme as the first dose and 0.3 gramme on each occasion subsequently to all except very debilitated adults.

The injections were given intravenously three times weekly, in most instances a 5% solution being used.

Of the 77 patients who were eventually discharged as cured and whose subsequent history we know, 69 received from 10 to 15 injections."

"Results of Treatment. The immediate result of treatment of the 104 cases was as follows:—

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<th>104</th>
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<tr>
<td>Discharged cured</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>90</td>
</tr>
<tr>
<td>Failed to respond to treatment</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Died</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>11</td>
</tr>
<tr>
<td>Did not complete course</td>
<td>...</td>
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The Failures. The first was an Anglo-Indian boy, aged 7 years, who had previously received 3 "courses" of treatment with sodium tartrate and one course of Urea-stibamine during a period of over two years. He was given 23 injections of Stibosan totalling 3.35 grammes, which is equivalent to a dose of 10.24 grammes per 100 lbs. body weight; he did not show any improvement clinically and a spleen puncture carried out towards the end of the course of treatment demonstrated the presence of large numbers of parasites.

The second case was that of an Anglo-Indian girl, aged 5 years, who had previously received 24 injections of Urea-stibamine. She was given 25 injections of Stibosan during a period of 67 days; the total amount given was 2.65 grammes which was equivalent to a dose of 7.8 grammes per 100 lbs. of body weight; she showed no improvement clinically and a spleen puncture carried out just before her parents took her away from hospital showed large numbers of parasites. I have heard subsequently that up to a year after her discharge from hospital she was still suffering from the disease.

The Deaths. These patients were with one exception in very poor condition when the treatment was commenced.

Cases discharged as cured. "An effort to trace these patients 6 months after they had been discharged gave the following result:—

Cured ... ... ... ... ... ... 70
Relapsed ... ... ... ... ... ... 7
Died of some other condition within 6 months ... 2
Not traced ... ... ... ... ... ... 11"

"The Mean Dose—for actual doses:—

The mean dose of the whole series is 2.78 gm.
,, ,, cured patients is 2.75 gm.
,, ,, 7 relapsing patients is 3.06 gm.
,, ,, 15 resistant patients is 3.28 gm.

The Mean Dose—relative doses. (The relative dose being the dose per 100 lbs. body weight.)

The mean dose of the whole series is 4.00 grammes ± .97
,, ,, 70 cured cases in 4.02 ,, ± .99
,, ,, 7 relapsing cases is 3.80 ,, ± .74
,, ,, 15 resistant cases is 4.32 ,, ± 1."

Discussions. "The death rate of the series was nearly 11 per cent. The patients were unselected and included some very debilitated ones."

"The death rate among patients in a previous series treated with sodium and potassium antimony tartrate was 14.4 per cent."
As the patients are all of different ages and weights and as the well-established principle that dosage should be relative to weight appears to be supported by certain observations recorded above, we will discuss the dosage as referring to an adult weighing 100 lbs.

It is obvious that there is no 'absolute sterilizing dose'. A dose of 10 grammes would probably 'sterilize' 99 out of 100 patients. The mean sterilizing dose is not a figure of any importance; in this series it was 4.0 grammes, and it will be seen that if every patient had been given this dose the relapse rate would have been 6.5 per cent."

'A satisfactory dose for the initial course would be 3.5 grammes, after this one would expect a 9 per cent relapse rate which could be reduced to 2 per cent by giving the relapsing patients a second course of 6 grammes, or to 1 per cent by giving a second course of 10 grammes; thus, excluding the possibility of deaths amongst the more debilitated patients, a cure rate of 98 per cent can be obtained with an expenditure of 4.04 grammes or a 99 per cent cure rate with the expenditure of 4.40 grammes per 100 lbs. weight of patient treated.

Up to this point the discussion is based on the assumption that there are no clinical observations or laboratory examinations which will indicate the progress of the patient during the course of treatment. I think that it is obvious from the analysis of these various factors that no hard and fast rules can be made but that in a general way the rate of fall of temperature, the diminution in the size of the spleen, the increase in weight of the patient, the increase in the total leucocyte count and the result of the spleen or liver puncture do give some indication as to whether a patient is cured or not. Therefore when a doctor is in a position to make accurate observations on these various points he may be justified in cutting down the course of treatment in certain cases where the progress is obviously very rapid, as thereby he will run little risk of increasing the general relapse rate; but he will have to remember that unless he exercises very considerable caution he must expect some rude shocks. Even this small series of relapses recorded above include a case in which the temperature fell to normal after the fourth injection, one in which a 5-inch spleen disappeared below the costal margin within three weeks of the commencement of treatment, one whose weight increased by 12 lbs., one whose leucocyte count increased from 3,000 to 7,750 per c.mm., and two whose liver puncture culture was 'negative' at the time of discharge."
COMMUNITY CONTROL OF TRACHOMA IN CHINA*

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The title of this paper implies that trachoma can be controlled. So much has been written and said concerning the dangers and the consequences of the disease that it seems worth while to refer to certain phases of the situation, which ought to give hope rather than discouragement to those who are working, and to those who are willing to work, for the eradication of trachoma in this country. At the same time it is not my intention to minimize the seriousness of the disease and its hold on China. In order to lead up to certain suggestions regarding the control of trachoma, I shall first mention and explain certain factors in the trachoma situation, some of them being peculiar to this country, which should provide a better understanding of the problem, and give an added impetus to those efforts now being put forth to stop the further dissemination of China's most serious disease from an economic standpoint.

A. The encouraging factors in the situation:

1. The incidence of trachoma in China.

From personal examinations and from data gathered from many sources, it seems conservative to state that between ten and twenty per cent of the population in South China have trachoma and that not less than thirty per cent in North China are similarly afflicted. The evidence seems to support the assertion that the incidence of the disease increases as one goes north and possibly also as one goes west. On this percentage basis at least one hundred million people in the entire country have trachoma.

If I should be asked if it were my opinion that, on the whole, the percentage of infection had reached its maximum, I should be inclined to state that I believed it had, without being able to give much conclusive proof. From all the historical evidence at hand, it appears that China has been afflicted with trachoma for many centuries. Trachoma is often referred to as an Egyptian disease, i.e., as having had its origin in Egypt. This is merely a theory, held chiefly because in Egypt the saturation point of the disease is reported as being more than 95 per cent. But conditions in Egypt have always favored a practically complete infection of the population. Any traveller to that country could give the chief

*Read before the Section on Hygiene & Public Health of the China Medical Association at the Eighteenth Biennial Conference held in Peking, Sept. 1926.
reasons for it. He would say that personal uncleanliness combined with the swarms of flies that are permitted to exist because of the inhabitants' religious fanaticism are the chief causes. In no other country are flies allowed to alight and remain unmolested on the faces and eyelids of helpless babies as well as of adults, of whom the majority have conjunctival discharge streaming more or less over their faces. In Egypt's case the conditions are ideal for almost 100 per cent infection, and moreover she has it.

The saturation point depends, therefore, chiefly upon the attitude and personal habits of the individuals making up a country. If this be true, then, in China, where personal hygiene is steadily improving and knowledge of disease and its dissemination is daily becoming more general, the saturation point has probably been reached, and from now on there should be a gradual diminution in the incidence of trachoma through those factors alone. There are other factors, of course, which aid trachoma dissemination, such as the lack of water in North China which favors the creating of an atmosphere laden with dust. Dust is indirectly responsible for trachoma infection, because it irritates the eyes and causes people to rub them; if their fingers and hands happen to be contaminated with any fresh trachoma virus, e.g., through handling the towel of an infected case, transmission of the disease to their own eyes may occur.

2. The transmission of trachoma.

Numerous investigators have proved that the disease is transmitted from infected cases through the conjunctival discharge which contains the specific virus. Fortunately, the virus loses its potency after it has been dried for three or four minutes. There is no evidence at all that trachoma is transmitted by dust particles. If it were, certainly no one in North China could escape the disease. The effect of heat and sunshine on the virus of trachoma fortunately makes trachoma a disease which is not easily transmitted. How then is trachoma transmitted?

It is well to be specific and place the blame chiefly where it belongs. It belongs to nothing else than the "common towel" in China. But the common towel is not peculiar to China alone; it is also common to some other countries among which are Egypt and India, and to a certain extent Japan. In these other countries the towel also plays a serious part in trachoma transmission. But we are not concerned in this paper with any country but China. It is my strong conviction that, once the common towel is done away with in this country, dissemination of the disease will practically cease.
3. The question of the relative virulence of trachoma in China.

Trachoma is a self-limiting disease, i.e., there is a tendency to connective tissue transformation of the chronically inflamed areas. In this country we see many cases of spontaneous healing in the early stages; we see scar tissue formation in these cases, but the cornea, fortunately, has been but little, if at all, damaged. In Europe and America spontaneous healing in the early stages of trachoma only rarely occurs. There the disease generally goes on to serious involvement of the cornea; often to ulceration and perforation which produce blindness. Even in Japan, my personal observations make me feel that the disease is more virulent there than it is in China. I once heard a Japanese physician state that in a certain district in his country there was an average of about one hundred blind eyes to every one hundred persons. In the prefecture of Niigata, on the northern shore of the main island, it is said that the incidence of trachoma is not less than 75 per cent. But it would be a mistake to give the impression that trachoma in China does not often lead to blindness. Ex-Premier Hsiung Hsi Ling once told me that he estimated the number of blind persons in China to be not less than one in every two hundred of the population. On the basis of these figures there are more than two million blind people in this country—truly an appalling number! Trachoma is, of course, not the cause of all the blindness in China, but it is probably the cause of approximately one-half the blindness; i.e., equal to all other causes combined.

It seems, on the whole, that the virulence of trachoma is relatively less in China than it is in Europe or America. This possibly is due to a greater immunity to the disease, established on account of its having been rampant here for a longer period. What hope there is in this factor, one is welcome to take. But if he should decide to do nothing but wait until the human body had provided a complete immunity against the disease, he should be informed that man would probably have reached, by the time this had been accomplished, several appreciable steps upward on the ladder of evolution.

B. The control of trachoma:

1. Preventive.

As far as trachoma eradication is concerned, effective preventive measures are almost infinitely more important than is treatment of those who have it. In the preceding section it has been intimated what some of these measures might be. The most hopeful phase of this problem is the rapid increase of interest and concern by the
Chinese people as a whole. The greater economic strain is now demanding more of the individual than ever before; blindness is a more serious matter both to the person who suffers it and to the members of his family who have to support him. Furthermore, teachers and principals of schools are beginning to look upon trachoma among their students as a serious thing. Recently, several schools in and near Peking refused to admit children who had trachoma. The effect of this ruling immediately became apparent in various eye clinics in the city—a large number of children suddenly came for treatment.

This increasing manifestation of interest in the subject of trachoma ought to give heart to those who are backing Health Education in China. The pamphlets published and distributed by the Council on Health Education are undoubtedly bearing fruit. If a national campaign could be undertaken for the purposing of putting a ban on the "common towel", excellent results could quickly be attained, I feel sure. The time is opportune for such a move. The rapid increase in the printing of newspapers, the mass education movement, the nationalist movement with its health programs, the favorable attitude of teachers and public officials, and many other factors, seem to offer an unusual opportunity for propaganda against the common towel at the present time. It goes without saying that in all plans for Health Education in any community, the eradication of trachoma should be strongly emphasized.

2. Treatment.

The etiology of trachoma is still unknown. The epithelial cell inclusions which are found in the great majority of trachoma cases, clinically diagnosed as such, have not been generally accepted as the causative agents. A number of scientific investigators are working on the problem, and it is hoped that one of them will soon be successful in proving the cause. Until that time comes the treatment of trachoma will have to be more or less empirical. At the Peking Union Medical College we have tried many kinds of treatment, but have always returned to the bichloride of mercury and boric acid powder rub. But whatever the form of treatment, the curing of trachoma is an exceedingly difficult undertaking. It may cause some persons considerable uneasiness for me to state that one is never sure that a trachoma case has been cured. At the shortest, it takes months, and generally years, to cure; even then there can be no guarantee that there will not be a relapse sometime in the near future. But there
is one thing about treatment which should be stressed, and that is, an eye under vigorous treatment practically never transmits the disease. Moreover, eyes that have been treated for months or years have so little residual inflammation, that they are most unlikely to transmit the disease. In these cases general scar tissue formation has taken the place of the diseased tissue, the same that occurs in spontaneous healing.

While it must be admitted that a final and complete cure is most difficult to accomplish, it must also be emphasized very strongly that marvellously beneficial results are brought about by treatment, even in the simplest forms, e.g., hot water compresses without any other treatment. Oftentimes we see patient's vision restored several hundred per cent and their symptoms disappear following several weeks' or a few months' treatment. The treatment that we generally use and have tried to introduce into China, i.e., the bichloride-boric acid rub, is so easily learned and so devoid of danger that almost any person with a certain amount of manual skill can learn it in a few hours. This being the case, I should like to recommend that all school teachers be taught to give this form of treatment to infected pupils under their charge. It is impossible to expect the comparatively few physicians in China to be able to handle more than a small percentage of the cases, and it is unfair to the remaining great mass of unfortunates not to provide the means for alleviating their suffering and safeguarding their future against blindness.

The trachoma problem in China, therefore, offers great hope of being solved in the not very distant future. But it will not be solved because of acts performed or decrees issued by the national government. The impetus and the energy must emanate from the individuals that make up small communities. I have often suggested that one of the most striking and effective public health demonstrations that could be made in China, would be to establish a central trachoma station or clinic where, in addition to treating those afflicted with the disease in that community, many competent persons (teachers, minor officials, employees of factory workers, etc.) could be trained to perform the treatment and receive public health instruction, with the understanding that they would return to their own communities and do likewise. With a certain amount of supervision and organization such a project might readily develop into a demonstration of gigantic proportions with the whole field of China as its goal.
During the writer's sojourn at Soochow for the past seventeen years there are records of 206 cases admitted to the hospital with a diagnosis of appendicitis. Since 1914 rather accurate records have been kept and since that date some 13,600 Chinese have been admitted as inpatients and of these 154 were diagnosed appendicitis. In addition to these we have records of eight cases of Chinese treated previous to that date and we have 44 cases among foreigners, making a total of 206. This paper is a report of these 206 cases.

In addition to the cases admitted to the hospital there have been fully as many or more seen in the clinic or on outcalls who refused to enter the hospital. During the period covered by this report we have admitted one Chinese with appendicitis into the wards every 25 days and 1.1% of all our inpatients for the past 12 years has had this diagnosis. In considering the incidence of the disease here we have eliminated the foreign cases for obvious reasons. There has been no foreign case refusing treatment and none have been without proper attention, which is far from true among the Chinese. The frequency with which we diagnose appendicitis leads us to feel that it is a rather common disease among the Chinese in and around Soochow.

For the past 40 years appendicitis has been recognised as a very common disease in Western countries and is still the cause of a very large number of deaths. In a recent article Willis1 has shown that the death rate in the United States from appendicitis is on the increase and that the present death rate is 14.7 per 100,000 population. He suggests that this high and increasing death rate is in part due to poor surgery. The idea seems to be prevalent that anyone can operate for appendicitis and if not he is not worthy of being called a doctor. Consequently the patient readily consents to the operation having full confidence in his surgeon, who may do only an occasional operation. The ordinary interval or chronic appendix is a simple procedure aside from errors in diagnosis but rather keen judgment and careful technic are required in the acute and suppurating cases. Here every step, in fact every movement of the surgeon and his assistant, is of importance.

*Read before the Surgical Section of the China Medical Association Conference, Peking, September, 1926.

When the writer came to China in 1909 one of the first dictums he heard was: "The Chinese do not have appendicitis". This claim is still put forth in some sections and the prevalence of the disease is questioned by some of our leaders to this day. Abdominal surgery in China is still in its infancy but its lack of development is due more to other factors than the lack of surgical diseases of the abdomen. 1. We have the fear of the people for such serious procedures as opening the abdomen. 2. Our mission physicians are in many cases alone and find it rather difficult to undertake major surgery. 3. The busy man always sees a long line of patients waiting for him and finds it difficult to investigate the obscure conditions. 4. Many physicians do not take the time to put every patient complaining of abdominal pain on the table and locate the origin of the pain. 5. The people soon learn that a certain doctor is good for the relief of certain conditions and not good for others. If a doctor relieves one patient of abdominal pain two others will come to see him.

Appendicitis is an inflammation of the Vermiform Appendix. The degree of inflammation may vary from a mild acute or chronic process to a gangrene of the entire member or the breaking down of the walls with discharge of its contents into the abdominal cavity with consequent local or general peritonitis. This inflammation, if left alone, may be overcome by the forces of the body for fighting inflammation, or the infection may be more than these strong forces can combat, and abscess forms. This may even rupture of its own accord to the outside and in time heal or form a permanent sinus. But the most common ending of those cases where the forces of nature are unable to win is death from toxemia.

In our classification we have, for brevity's sake, slightly modified that given by the United States Standard Nomenclature of Diseases and Pathological Conditions. We have grouped together the Perforative and Suppurative under the one head of Suppurative. We have also eliminated the Subacute and put these in the Acute or Chronic. Then we have added one group, Sinus, which has its direct origin in the appendix. An understanding of what is included in each of these groups is essential to a study of this disease. We shall, therefore, first define our different groups. The order in which they are given is determined by the intensity of the pathology.

Chronic. This is a condition characterized by repeated attacks, more or less mild, of abdominal pain usually located in the right iliac region or referred to the umbilicus or ensiform, by more or less indigestion and by definite tenderness over the caecum on palpation. The pathology of this group is a chronic induration of the member, an enlargement throughout or at one point, one or more fecal concretions,
or its involvement in adhesions to the peritoneum. The patient is almost daily conscious of some discomfort in his abdomen and he realizes he is not quite normal.

**Acute.** This is a condition where the inflammatory process is beginning to get the better of the combatting forces of nature. An acute congestion and swelling takes place, the vessels over the member are injected and stand out prominently. There may be a constriction at some point or a fecal concretion may often be found, or the appendix may be involved in adhesions. An exudate rapidly forms and there is usually a slight rise in temperature and an increase in the number of the white blood cells.

**Gangrenous.** The acute condition has gone on to the point where the blood supply to the mucous membrane has been cut off and the mucosa becomes dark in color though this may not be observed except on opening the lumen. If the process continues the serous coat also becomes involved and the condition passes on to perforation and suppuration.

**Suppurative.** Gangrene is not necessarily a step in the suppurative pathology. The acute appendix will often be covered with a streptococcic membrane and pus formation will take place before perforation does. Even here resolution may take place but when gangrene once starts perforation and suppuration are sure to follow. When the suppurative process works more slowly the area is walled off and an abscess is formed which may slowly or rapidly enlarge, breaking down the walls of defence and producing a general peritonitis. If the appendix is post-peritoneally located or is between the caecum and the parietal wall it may lead to abscess of the soft parts instead of involving the abdominal cavity in which case it will burrow through the soft parts by the route of least resistance. When suppuration has gone to the point where drainage is required we classify it as suppurative.

**Appendiceal Sinus.** If the abscess, whether intra-abdominal or post-parietal, ruptures to the outside the patient may overcome the acute inflammatory process and a sinus form which leads to the open appendix. Such an appendix may become obliterated or amputated by the forces of nature and the sinus in time be closed. We have seen such cases, but the usual thing is the sinus is persistent until the offending organ is removed.

There are many stages that might be named between these five classes or different terminology might be given them, but for purposes of this paper we have used the above classifications. Our series of cases are grouped as follows:
Appendicitis

<table>
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<th>Type</th>
<th>Chinese</th>
<th>Foreign</th>
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</thead>
<tbody>
<tr>
<td>Chronic</td>
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<td>21</td>
<td>66</td>
</tr>
<tr>
<td>Acute</td>
<td>48</td>
<td>16</td>
<td>64</td>
</tr>
<tr>
<td>Gangrenous</td>
<td>14</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td>Suppurative</td>
<td>51</td>
<td>4</td>
<td>55</td>
</tr>
<tr>
<td>Sinus</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>162</td>
<td>44</td>
<td>206</td>
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**Etiology.** We do not care in this paper to go very far into the discussion of the cause and how the inflammatory process gets under headway. The cause is infection which is ever present in the intestinal tract and whatever interferes with the circulation of the appendix or opens up the road for the infection to penetrate the wall serves as an exciting cause. We want to call special attention to two exciting causes. First, the round worm, ascaris lumbricoides, may directly enter the lumen of the appendix and set up the inflammatory process. These parasites no doubt frequently enter the appendix without producing trouble, but we have on several occasions found one to three round worms in the lumen and apparently the cause of the acute symptoms. Second, the ovum of the Schistosoma japonicum is deposited by the adult fluke in the small veins of the mesentery and colon. These ova attempt to burrow their way through the wall of the intestine into the lumen in their effort to find the outside world and median host. Where they slough through, there an ulcerated condition remains and serves as an entrance for pyogenic infection. In heavy infections the appendix and colon walls are filled with these ova. Now when such ulcerations take place in the walls of the appendix it is easy to understand how a severe inflammatory process can be started. In our series there are several cases where the causative factor has been the Schistosoma japonicum.

As to sex our cases are divided into males 133 and females 73, which is about the same ratio that the sexes have in our in-patients.

The ages range from 4 to 79 with an average of 27.3

<table>
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<td>51 to 60</td>
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<td>Over 60</td>
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**Signs and Symptoms**

*Chronic.* This patient will usually complain of abdominal discomfort or pain especially after a full meal. He feels that he is not digesting his food and will speak of his condition as "sin li tong."
"koer chi tong" or "wei chi tong" which expressions cover very well the usual pathology of the right abdomen. The Chinese is quick to learn that the use of congee instead of dry rice leaves him more comfortable while he is thus suffering and he goes on a diet until his attack passes. His pain is just as apt to be located in the upper abdomen or umbilicus as over the region of the appendix. There will be eructations of gas, fullness after eating and constipation. On physical examination he will usually tell you where his pain is and you must feel there first. When pressure is made over the caecum or the appendix is rolled under the palpating finger the patient's face will show definite signs of pain which will not be elicited with the same manipulation elsewhere. If there has been a recent acute attack which has been overcome by the forces of nature there is apt to be considerable tenderness over the appendix region and perhaps a slight mass.

**Acute.** This usually comes on with a pain, which at first may be referred to the upper abdomen and then to the umbilicus and finally located over the appendix itself, and which becomes rapidly more severe. Nausea and vomiting will usually come on rather early and are quite constant, but the vomiting does not give the relief which it does in the chronic upper abdominal conditions. There may be a chill or the temperature may rise gradually without the chill. The patient will often fail to observe the rise in temperature unless it becomes very high. As the attack progresses the temperature rises. A leucocytosis will start early and increases rapidly with the severity of the disease. Pressure over the appendix region will produce pain the severity of which is somewhat indicative of the severity of the process. Pressure over other portions of the abdomen will give pain on the appendix region. The right leg will be drawn up because the relaxation of the abdominal wall thus secured will lessen the pain. There will be an appreciable rigidity of the abdominal wall over the right lower quadrant which increases with the severity of the disease.

**Gangrenous.** The symptoms here are the same as those in the severe acute form. An acute attack which has developed rapidly should be suspected as gangrenous, though differentiation is impossible before operation.

**Suppurative.** When this patient presents himself he is liable to have symptoms ranging from a small abdominal abscess to a general peritonitis or may even be nearing death. Abdominal pain is his chief complaint and he may state that he has a tumor in the right iliac region. In a late general peritonitis this mass will have disappeared. He will be running a septic temperature and the pulse will be full and bounding
in the earlier cases and weak and thready in the late ones. The nausea and vomiting of the acute stage may be persistent though often stop with the onset of the general peritonitis. There may still be a mass in the abdomen without a general peritonitis which will show that the process is still under control or walled in. In the advanced cases of general peritonitis the board like rigidity will have passed away and the outline of the distended intestines may be visible and the condition may suggest intestinal obstruction. Tenderness is most intense over the appendix but may be present over the entire abdomen. The blood reaction is that of the septic abdomen and in it we find some indication of the fight the patient is making. In the more severe cases the local examination will give no indication as to the location of the disease, while in those cases where general peritonitis has not set in the local examination shows a mass which is tender and indurated with no movement of the abdominal wall over it.

Appendiceal Sinus. Here we have a discharging sinus which refuses to heal. There may be no signs or symptoms pointing to the appendix and there may still be a definite mass of old adhesions. The discharge may not give any evidence that the sinus has its origin in the intestinal tract or again it may be a fecal discharge. In addition to the sinus we may expect the general signs and symptoms of the chronic appendix.

Diagnosis

In the average or typical case the diagnosis is not at all difficult. Some of the laity of Soochow have already learned to recognise it. There is an occasional case where everything seems atypical and the ability of the surgeon is put to the test. The chronic cases give the most difficulty and are the source of the most errors in diagnosis. It is here we have the ever troublesome right abdomen for differentiation.

Chronic. Here history is of great importance and the vague history which the average Chinese patient gives makes the task of diagnosis doubly hard. However careful and repeated questions may be asked, the patient is rarely going to give intelligent answers from our point of view. Their superstitious ideas are constantly entering into their answers. Many also have the idea that the less they tell the doctor the better. There will usually be the history of repeated mild attacks of abdominal pain located in the upper, central or lower right abdomen. During these attacks there will be a loss of appetite and constipation. These attacks may have been of a mild acute type, in which case the symptoms now will be more severe. Between the attacks there may be a complete cessation of all symptoms or there may be a slight consciousness of abdominal discomfort all the time.
in which case there will be more or less indigestion all the time. Attacks will be brought on by over eating. These attacks may last from one to ten days or even be continuous. They usually are not accompanied by fever and rarely cause nausea. There is also no reaction in the blood. A patient giving a history of this kind with the local signs above referred to is quite safely diagnosed chronic appendicitis. But we must keep constantly in mind other possibilities. We must differentiate from chronic cholecystitis, ulcer of the stomach or duodenum, colitis in all its forms, disease of the right kidney and ureter and in women of the right pelvis. Abdominal symptoms suggesting appendicitis are not at all uncommon in an acute exacerbation of a chronic malaria, and in a malarial district should always be kept in mind. A detailed consideration of the differential diagnosis is beyond the scope of this paper.

**Acute and Gangrenous.** Since it is not possible to differentiate between these two forms before operation their diagnosis is considered together. There may or may not be a history of chronic appendicitis as described above. This may be the first attack the patient has ever had. Regardless of the chronicity there will be a history of abdominal pain beginning at the ensiform or umbilicus and later locating in the right iliac region. This pain may be very severe from the beginning or it may have been slowly growing in severity over a period of several hours or days. The intensity and acuteness of the pain is an index to the severity of the inflammatory process. Those developing rapidly and with great intensity are to be suspected as gangrenous. In nearly every case there will be a history of nausea and vomiting and in the absence of this symptom one should be doubly on one's guard for some other condition. These patients are liable not to have observed a slight rise in temperature or a slight chill early in the disease, but will observe the higher rise when suppuration begins. Such a history with the local signs going with this stage and the blood count will give sufficient evidence on which to base a diagnosis. One of the most important local signs is pressure on the opposite side producing pain in the appendix region. The absence of an increased leucocytosis should make one very slow to diagnose an acute appendix. Especially valuable is a repeated blood count every two to three hours. In the acute, we must differentiate from the acute right pelvis, right ureteral colic, perforating ulcer of the stomach or duodenum, acute pancreatitis, acute gallbladder, gallstone colic, pyelitis and incarcerated hernia.

**Suppurative.** The line between the acute and suppurative is hard to draw. The writer has seen a marked purulent exudate in the right iliac fossa four hours after the first intimation of trouble. Another case was opened in ten hours after the first sign, which was a sudden
Appendicitis

and severe pain waking the patient up in the middle of the night, and some 800 cc. of pure pus were removed from the abdominal cavity. In such cases the acute stage is very short. The history will be that of the acute stage with all of the signs and symptoms growing more intense. The local examination and the blood count will both show the condition to be much worse than in the acute stage. If it comes to a point where a guess is necessary and the pathology is in the lower right abdomen, guess the appendix for it is the most common pathology in that area. Here too we must differentiate from all the acute abdominal conditions named above in their more advanced stages, as well as intestinal obstruction, strangulated herniae and psoas abscess. Needling by the acupuncture man is an ever present complication in both the acute and suppurative forms. General peritonitis is brought on more rapidly and pathology added to pathology.

Sinus. In this country a sinus anywhere on the body is not at all uncommon and the determination of the origin is not always easy. If the suppurative appendix is left without interference there will be a few cases able to survive the process until the pus can break through the abdominal wall and establish drainage. When drainage is once established resolution is sometimes very rapid. In many of these advanced suppurative cases, bacteriolysis, no doubt, plays an important role. A sinus of appendiceal origin has a wide range of location. It may be anywhere on the right side of the abdomen, the umbilicus, the inguinal region and along the ilium. Again it may be directed posteriorly in which case it follows the psoas fascia down under Poupart's ligament or to the back and breaks through Petit's triangle. We will have a history of an acute and suppurative attack followed by a long discharge of pus and gradual improvement and formation of the sinus. The patient was so seriously sick that he can give very little history and the history given by the relatives is very unreliable. If the discharge is of fecal nature we will know that the origin is the bowel, but if only the tip of the appendix was involved there may be no fecal discharge. The most accurate method of preoperative diagnosis is the injection of bismuth paste and the x-ray. Detail of this procedure must be left to the roentgenologist. In diagnosing this condition we must ever keep in mind that the most common origin of a sinus is bone and that the appendix is the unusual cause. But when dealing with a case of apparently psoas origin we must keep in mind the possibility of its being appendiceal.

Treatment

The question of treatment in appendicitis must be determined by the pathology. Our feeling is that surgery is the only treatment, but
the technic of the surgical procedure is all important. In our work we have had but one dictum: "operate as soon as a case is definitely diagnosed as appendicitis." The acute and suppurative forms are treated as emergencies in our hospital and are usually on the operating table within one hour after arrival in the hospital. The chronic case may select his convenient time before the next attack comes on, but we do not agree with the advocates of putting off the acute case for an interval operation. Entirely too large a percentage of the acute cases are gangrenous to take such a risk. The risk of postponing is far greater than that of operative mortality when done with good technic. In our series out of 67 operative cases of the acute and gangrenous groups, seventeen or 25% were gangrenous. Any attempt to carry these past the attack would probably have ended in failure.

In dealing with the chronic appendix we always use the right rectus incision in order to have access to the upper and lower abdomen and these should be explored carefully for pathology before the appendix is examined. If there is any pathology in these other parts it is first disposed of. The appendix is drawn up into the incision by catching the caecum with the index finger. If there are no adhesions the appendix comes up with ease. Where adhesions are present they must first be broken up. The appendix is drawn well outside of the abdominal cavity and protected with saline gauze pads. The mesoappendix is clamped off; a pursestring of strong fine silk is passed around the stump; the appendix near the stump is crushed with a clamp and burned off with an electric cautery. Where there is no pressure on the intestinal contents it is not necessary to tie the stump before cauterizing, but if there is danger of intestinal contents being pushed out before the stump can be invaginated it is well to tie it with a fine catgut. After invaginating the stump and tying the pursestring a second one also of silk is passed and tied. The mesoappendix is tied with catgut or silk in one or more ligatures as indicated and these in turn tied to the last pursestring thus covering up all raw surface of the mesoappendix to avoid adhesions. If it has been necessary to break up any adhesions the raw surfaces should be properly folded in.

In the acute and gangrenous appendix there is another situation; we are dealing with an active and not a quiescent process. There is liable to be an early purulent exudate in the abdominal cavity and this may develop so rapidly that the abdominal forces are unable to wall it off. Gangrene may be progressing in the mucous membrane and we are unable to recognize it clinically. It is here that careful technic is required and great care must be taken not to scatter this virulent infection into other parts of the abdominal cavity. The incisions
should be nearest the site of infection, directly over it if possible. We know the appendix has a wide range of locations. The most tender spot is an indication of its location and it is over this or to the outer side that the incision should be made. We should never go to the inner side for fear of directing the infection toward the central abdomen. We usually make the split muscle incision and before opening the peritoneum the walls of the incision are protected by gauze. If there is an early purulent exudate it must be sponged out with care by passing strips of gauze into the cavity. Only that exudate which is apparent need be considered, but under no circumstances should one useless stroke of manipulation be made nor any effort to explore the pelvis or upper abdomen. If the right guess has been made for the incision the appendix, swollen and inflamed, will be directly under our opening. It should be gently brought up and removed with the least possible manipulation. If fresh adhesions are present they should be disturbed only enough to remove the offending member. If there is no exudate present the procedure should be the same as in the chronic, but if exudate is present the appendicectomy must be done with the least possible disturbance of the caecum and surrounding viscera. Gentleness, minimum manipulation and thorough packing off of the field are the principles to be followed. Where the appendix is not brought up outside the abdominal cavity the passing of the pursestring is a little more difficult. We are frequently going to have the border line case between the acute and suppurating and this line is only a hair's breadth. Shall we drain or not drain? "If in doubt drain" is a safe dictum. The abdominal cavity is able to take care of a lot of infection and if we are dealing only with an exudate and not a ripe pus and the source of this infection is removed, we are safe in closing the wound without drainage. If an actual pus cavity has been formed we must drain for a few days at least. In the gangrenous case where the serous coat has not broken down drainage is unnecessary. The great danger here is a delay in operation. The treatment of the suppurative type is quite similar to the acute. The location of the incision is the same. The question of removal of the appendix or of simple drainage comes up for decision. In suppuration following gangrene, and these cases are very numerous, there will be fragments of the sloughed appendix and loose fecal concretions in the abdominal cavity. If the appendix can be found readily or if it has sloughed off and the stump can be tied or re-amputated that should be done. But if very much manipulation and breaking up of adhesions is necessary to locate the appendix it had better be left alone. The only question about drainage is how much and that is very important. If we are dealing with an early suppurative process where the pus is walled off, the cavity can easily be evacuated
the appendix removed, and the pocket drained without disturbing the abdominal cavity. Such a case should be out of the hospital in 15 to 20 days. But if it is an advanced suppurative condition with general peritonitis of several days standing we have another problem in drainage. The pelvis, the central abdomen, the upper right and occasionally the left side have to be drained. One or more stab wounds for this drainage may be the wisest procedure. For drainage material we use rubber tubes, rubber tissue, and cigarette drains made of rubber tissue tubing with very loose gauze in it. These cigarette drains used freely are our choice. A partial closure of the abdominal incision should be made with silkworm gut after the peritoneum has been closed around the drains. After 2 to 4 days we begin removing these drains by shortening them one inch or more each day till they are out.

The treatment of the appendiceal sinus is usually a difficult problem unless it has been an extraperitoneal affair. The object is to remove the origin of the sinus, the appendix stump, and to close the fistula. Except where the appendix was extraperitoneal we will have to deal with a mass of adhesions involving several loops of the small intestines and often producing obstruction. When obstruction is present the first thing is to do a lateral anastomosis between a distal and proximal loop and at a later date attack the sinus and the appendix stump. It is best to attack the stump from one side and not attempt to follow down the fistulous tract. There is also liable to be another opening in the intestines than the appendix stump or this is apt to be torn in breaking up the adhesions. Again after healing it may break down. One of our cases was sent home entirely healed and had a recurrence and a second time we failed to get healing. Persistance, patience and care will usually win, if the patient will stay with the surgeon.

Results

The results in a series of cases with such a wide degree of pathology must be considered in groups. In our 206 cases, 44 were foreigners, all of whom came to operation. Only one death occurred and he was a Japanese who had had a general peritonitis for six days. Drainage failed to save him.

Table of Results in 44 Foreign Cases

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Treatment</th>
<th>Cured</th>
<th>Died</th>
<th>Average days in hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic</td>
<td>Appendectomy</td>
<td>21</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Acute</td>
<td>”</td>
<td>16</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Gangrenous</td>
<td>”</td>
<td>3</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Suppurative</td>
<td>Append. &amp; Drainage</td>
<td>3</td>
<td>0</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Drainage only</td>
<td></td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>44</td>
<td>43</td>
<td>1</td>
</tr>
</tbody>
</table>
Of the 162 Chinese cases 128 came to operation and 34 refused. Of the 128 operative cases 16 or 12.5% died, but all of these were of the suppurative type except two, one chronic and one gangrenous.

Table of Results in 162 Chinese Cases

<table>
<thead>
<tr>
<th>Case refusing operation:</th>
<th>Chronic</th>
<th>Acute</th>
<th>Suppurative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>34</td>
</tr>
</tbody>
</table>

Results in 26 operative chronic cases:

Appendectomy 26 Cured 25 Died 1 Mortality 3.8%

Results in 34 operative acute cases:

Appendectomy 34 Cured 34

Results in 14 operative gangrenous cases:

Appendectomy 7 Cured 7
Appendectomy & Drainage 7 Cured 6 Died 1 Mortality 7.1%

Results in 50 operative suppurative cases:

Appendectomy & Drainage 32 Cured 22 Improved 3 Unimproved 2 Died 5 Mortality 15.6%
Drainage only 18 Cured 8 Improved 1 Died 9 Mortality 50%
Total 50 Cured 30 Improved 4 Unimproved 2 Died 14 Mortality 28%

Results in 4 operative sinus cases:
Various operations: Cured 2 Improved 1 Unimproved 1.

Length of time in hospital:

<table>
<thead>
<tr>
<th>Type</th>
<th>Cured</th>
<th>Died</th>
<th>Refused</th>
<th>Improved</th>
<th>Unimproved</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic</td>
<td>21 days</td>
<td>2 days</td>
<td>3 days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td>18 days</td>
<td></td>
<td>2 days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gangrenous no drainage</td>
<td>13 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gangrenous with drainage</td>
<td>24 days</td>
<td></td>
<td>1 day</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Suppurative:

Append. & drainage Cured 27 days Improved 74 days Unimproved 14 days Died 4 days
Drainage
- Cured: 30 days
- Improved: 26 days
- Died: 11 days

Sinus:
- Cured: 50 days
- Improved: 102 days
- Unimproved: 23 days

REPORT OF CASES

Case 1. Hospital No. 1914, a student, age 23, was admitted at 7:10 P.M. Jan. 14, 1918 with a tentative diagnosis of acute appendicitis. Pulse was 96 and temperature 98, white blood cells 4000, urine negative, feces negative and malaria negative. For four days he had had abdominal pain located in the right iliac region and severe vomiting for two days. Tenderness and slight rigidity were noted. Four months previously there had been a similar attack lasting for 20 days. Under chloroform anesthesia immediate operation was performed and the operation notes state that the appendix was club-shaped and only showed mild signs of inflammation. Appendectomy was performed with the usual technic. There was no rise in pulse or temperature following the operation. The next morning the pulse was 92 and temperature 97.8; at 3 P.M. 112 and 98.3. Pain and vomiting continued and the stomach was washed out. Two hypodermics of morphine gr. 1/8 were given. At 6 P.M. the pulse was 118 and temperature 97.2 and at midnight 118 and 99.4. Morphine and strychnine were given. At 2:30 A.M. the pulse went to 130 and the patient died. There are no notes on the chart regarding the probable cause of death, but the final diagnosis is put down as chronic appendicitis. This case was in the care of a colleague of the writer's and as the chart is now reviewed the impression is that it was a mistake in diagnosis and the real disease and cause of death was not determined. This case is here reported because it is the only death in all our series of chronic or acute operative cases.

Case 2. Hospital No. 8046, a married man, age 40. Final diagnosis gangrenous appendicitis. Twenty hours before admission, in the middle of the night, began to have abdominal pain which was referred to the umbilicus. This became rapidly worse and located in the right iliac region. About six hours before entrance had a chill and rise of temperature. Had one bowel movement after the attack began and had taken no food. Has not been nauseated and has not vomited. Very tender and rigid in the right iliac region. At 7:40 P.M., Mar. 19, 1925, was admitted to the hospital on a stretcher to first class ward. Temperature 100.5, pulse 76; white blood cells 16200, polymorphonuclears 90%; urine negative; feces, negative; malaria negative; Wassermann, negative. Was prepared for immediate operation and taken to the operating room at 8:20 P.M. Under ether anesthesia a split muscle incision was made. Appendix large, very tense and dark in color, communication with the bowel apparently cut off. Silk pursestring closure of the stump. There was no free pus in the abdominal cavity but the parietal wall was inflamed. Closed without drainage. The appendix was opened and found filled with a very foul fecal purulent material and all the mucous membrane black and gangrenous. The temperature did not go higher than at the time of admission and came to normal in 24 hours. The stitches were removed from the skin on the tenth day and the patient was discharged cured fourteen days after admission.
SUMMARY

1. Appendicitis is a common disease at Soochow, occurring more often than once in one hundred admissions.

2. 2.5% of the cases are sinus formation, where the appendiceal abscess has ruptured to the outside and nature carried the patient through.

3. There are fewer chronic cases treated than either acute or suppurative.

4. Ascaris lumbricoides is a frequent cause of appendicitis.

5. The ova of Schistosoma japonicum is a common cause of appendicitis.

6. It is a disease of the young, the average age in the cases reported being 27.3 years.

7. The diagnosis of appendicitis is not a difficult procedure.

8. The acute, gangrenous and suppurative cases should be operated on immediately after diagnosis.

9. The operative technic in all acute, gangrenous and suppurative cases should have individual consideration according to the degree of pathology.

10. The results of treatment are shown in each group of cases.

THE PHENOLTETRACHLORPHTHALEIN TEST IN SOME LIVER DISEASES OF CHINA*  
S. H. Zia, M.D. and J. H. Foster, M.D.  
Changsha, Hunan.

We see many forms of liver disease among our hospital patients in China: enlarged livers and spleens, with or without jaundice or ascites, with or without demonstrable parasites in the blood or the intestinal tract. Cirrhosis and splenomegaly like ascites are only symptoms, or the results of pathological processes due to toxins, or other agents, many of which are still unknown. Some of these are, however, better understood, or at least, more often recognized than formerly. With the recognition of the etiological agent, the diagnosis, prognosis and treatment of this group of cases becomes clearer; as for instance, the number of diagnoses on our medical service of "Splenomegaly, or

*From the Medical Service of the Hunan-Yale Hospital.  
Read before the Section on Medicine, Peking Conference, September 1926.
Cirrhosis, or Ascites, Cause Unknown have very materially lessened in the last few years since we have come to appreciate the role of the Kala Azar and Schistosoma parasites in the production of disease.

Theoretically, some such test for liver function as we have for renal function, should be of considerable help in the study, diagnosis and prognosis of these various liver diseases.

The liver is such a large organ. It has so many functions and such a large margin of safety, that any test may be criticised as being only specific for one particular function and as failing in the early stage of hepatic disease or dysfunction. Experimentally it has been shown that as much as twelve per cent of the liver of rabbits and seventy percent of the liver of dogs can be removed without any apparent impairment of function, and, with half of the liver removed in rabbits, and over seventy per cent in dogs, life can go on.

The literature for the last two or three years has been full of reports of various liver function tests. The most recent and most comprehensive of these reports are those from the Mayo Clinic, by Greene, Snell, Rowntree, Mann and others, in which the different tests are reviewed and the results of extensive animal experimentation and clinical application are presented.*

The tests, which seem to have survived up to the present are, first, those based on bile pigment determinations in the blood, the von den Bergh Test and the Menulengracht Test, (or Icterus Index), and, second, those based on the eliminating or detoxifying capacity of the liver, the Phenol-tetra-chlorphthalein, and more lately, the Bromsulphalein Tests.

In the Icterus Index the degree of bilirubinemia is determined by comparing the serum with a standard (1/10,000) solution of potassium bichromate. This test is warmly advocated by Bernheim. The von den Bergh Test is based on the reaction of the bilirubin of the blood with Ehrlich's Reagent. This test is widely accepted and its value seems to be greatest in the study of the changes in the development of bilirubinemia and clinical jaundice. In the latest edition (10th) of Osler's Textbook of Medicine the section on Jaundice has been entirely rewritten and the classification based on the von den Bergh Reaction. It seems a question whether this will prove justified.

The Phenoltetrachlorphthalein Test was introduced in 1913 by Rowntree and his associates as a test for liver function, but it was not practical until modified by Rosenthal in 1922. This dye has been

The Phenoltetrachlorphthalein Test

shown to be eliminated from the blood stream almost entirely by the liver. The test is performed by injection of the dye intravenously in doses of 5 mgm. per kilo of body weight. In normal individuals at the end of one hour, there should be none, or at least not more than 2% retained in the blood. The amount of retention is determined by withdrawing blood after one hour, separating the serum, bringing out the color of the dye by the addition of a small amount of alkali and estimating the amount of the dye by comparison in a standardized colorimeter. At present this is considered "the most valuable single test" for liver function. (Rowntree) *

During the past year and a half we have performed the Phenoltetrachlorphthalein Test in sixty three patients suspected of some sort of liver disease. In some we have also done the Icterus Index and the von den Bergh tests, but hardly enough to permit of any comparisons.

RESULTS

The various diseases in which the test was tried and the amount of dye retention is shown in Table I. There are too few of each group to permit any conclusions, but in general the results agree with what others have reported for liver and gall bladder diseases. Our cases of cirrhosis, nearly all with ascites, showed a retention of from 5% to 15%, though lower in the syphilitic cirrhoses. Cases of ascites due to Tuberculous Peritonitis and Chronic Nephritis showed practically no retention. Two cases of splenomegaly, probably malarial, had 2% and 6%. Our only case of Kala Azar, rather far advanced, had only 4% retention.

SCHISTOSOMIASIS

Of special interest to us have been the results in our cases of Schistosomiasis. Most of these patients come to us from Siang Ying, a distance of about fifty miles, in the third stage of the disease, with well marked symptoms and signs of a biliary cirrhosis. We know clinically from the ascites, the enlarged livers and spleens, the distended abdominal veins and the emaciation and weakness, that there has been much destruction of liver tissue. The Phenoltetrachlorphthalein Test has shown rather consistently a retention, although not always in proportion to the severity of the disease. An analysis of the cases, Table II, seems to show no relation between the amount of dye retention and the size of the liver or spleen, the duration of the disease, or of the amount of ascites, except that three cases in the early stage of the

Acknowledgment should be made to Hinson, Westcott & Dunning Co. for a Rosenthal Colorimeter and a generous supply of Phenoltetrachlorphthalein.
disease, with the ova of the Schistosoma Japonicum in the feces, but
with no ascites, palpable liver or spleen, showed no retention of dye.

In a few cases the test has helped in making a differential
diagnosis:

Case 1. L. S. F., a Chinese cook of 64, Hosp. No. 6665, was admitted to the
hospital on June 26, 1925, shortly after a profuse hematemesis. Hepatic cirrhosis,
with oesophageal varices was suspected. The morning after admission the
"P. T. P." Test showed only 1% retention. Later in the same day a soft pulsating
mass was observed in the left interscapular region. It was then recognized
that we were dealing with an aneurism of the thoracic aorta which was eroding
into the oesophagus. This diagnosis was confirmed by the subsequent course of
events.

Case 2. L. K. T. A Chinese officer aged 32, Hosp. No. 6821, was admitted
to the hospital on July 26, 1925, with a history of two weeks pain in the
epigastrium. There was slight fever, a moderate leucocytosis, no jaundice, de
finite tenderness and a question of a mass in the epigastrium. There were
doubtful signs of fluid in the abdomen. The diagnosis was uncertain and
seemed to lie between 1. Cholecystitis, 2. Hepatitis, 3. Abscess of, or about,
the liver, 4. Perforating ulcer, or, 5. Tuberculous peritonitis. The "P. T. P." Test showed 10% retention. An exploratory operation was performed on August
1st. The gall bladder was normal. There were several distended varicose veins
in the omentum with bleeding into the peritoneal cavity and the liver itself was
enlarged, beaded and cirrhotic.

In the first case the test helped to rule out the liver as a cause
of the hematemesis. In the second case it helped confirm the possibility
of liver disease as the cause of the upper abdominal symptoms.

On the whole the Phenoltetrachlorphthalein Test has agreed quite
well with the clinical findings. We had no false positives. Thus far
the test seems to have about the same value as ascites or jaundice: an
indication of disease when present, but not present until the disease is
well advanced.

Complications

Only three of our series had any untoward results. One had a
moderate chill an hour after the injection, but no further symptoms.
Two developed a thrombosis at the point of injection. One of these
was mild and painless. The other was quite severe and did not subside for over three weeks. One author has reported as high as 35%
with complications; 15% developed thrombosis, 7.5% had chills
and 22% had local reactions or small abscesses out of 27 cases. This is
more than others have reported.

Summary

The Phenoltetrachlorphthalein Test for liver function was performed
in a series of 63 cases of suspected liver disease in the Hunan-Yale
Hospital.
The Phenoltetrachlorphthalein Test

In most of the cases of cirrhosis and of jaundice there was a retention of from 5% to 30% of the dye.

Cases of advanced Schistosomiatis Japonica showed definite retention, while there was none in the early stages.

In this small series the test seemed to confirm the clinical findings of liver deficiency and in a few cases helped in making a diagnosis; on the whole it does not seem to offer much assistance in the study of the varied ascites, cirrhoses and splenomegalies.

Note. In a more recent article Murphy* of the Peter Bent Brigham Hospital concludes that the Icterus Index gives considerably more information than the phenoltetrachlorphthalein test, that it is much simpler, and that it is of considerable practical value to the clinician. He speaks of this group of tests as biliary system function tests rather than liver function tests. His article also contains a good bibliography.

BIBLIOGRAPHY


A quite complete bibliography of the Liver Function Tests will be found in the articles by Mann and Greene.

Table I

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Retention</th>
<th>Total Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cirrhosis, Biliary</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Syphilitic</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Schistosomiasis</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Catarrhal Jaundice</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Cholecystitis, Chronic</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Cholelithiasis</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Splenomegaly, Malarial</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Tuberculous Peritonitis</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>Nephritis, (Anasarca)</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Kala Azar</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Aortic Aneurism</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Normal</td>
<td>3%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Table 1. Showing the different diseases in which the Phenoltetrachlorphthalein Test was performed, with the amount of dye retention.

Table II

<table>
<thead>
<tr>
<th>Hospital No.</th>
<th>Occupation</th>
<th>Exposure</th>
<th>Duration</th>
<th>Symptoms</th>
<th>Asceses</th>
<th>Liver Size</th>
<th>Splenomegaly</th>
<th>P.T.P. Test</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>7155  36 Boatman</td>
<td>++</td>
<td>4 mos.</td>
<td>++</td>
<td>2 cm.</td>
<td>5 cm.</td>
<td>17%</td>
<td>Adv.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7260  29 Laborer</td>
<td>++</td>
<td>1 wk.</td>
<td>++</td>
<td>-</td>
<td>16 cm.</td>
<td>15%</td>
<td>Adv.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5398  14 Farmer</td>
<td>++</td>
<td>3 mos.</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td>11%</td>
<td>Adv. plus typhoid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5694  41 Farmer</td>
<td>++</td>
<td>3 yrs.</td>
<td>++</td>
<td>8 cm.</td>
<td>6 cm.</td>
<td>8%</td>
<td>Adv. + Syphilis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8899  23 Student</td>
<td>++</td>
<td>1 yr.</td>
<td>++</td>
<td>0</td>
<td>6 cm.</td>
<td>16 cm.</td>
<td>8%</td>
<td>Adv. ?</td>
<td></td>
</tr>
<tr>
<td>5616  18 Farmer</td>
<td>++</td>
<td>2 yrs.</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td>7%</td>
<td>Adv.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5623  40 Boatman</td>
<td>++</td>
<td>8 yrs.</td>
<td>++</td>
<td>-</td>
<td>13 cm.</td>
<td>0%</td>
<td>Adv.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5225  50 Soldier</td>
<td>++</td>
<td>6 yrs.</td>
<td>++</td>
<td>-</td>
<td>13 cm.</td>
<td>6%</td>
<td>Adv.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5708  24 Farmer</td>
<td>++</td>
<td>7 yrs.</td>
<td>++</td>
<td>-</td>
<td>17 cm.</td>
<td>6%</td>
<td>Adv.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7025  34 Boatman</td>
<td>++</td>
<td>5 yrs.</td>
<td>++</td>
<td>-</td>
<td>13 cm.</td>
<td>6%</td>
<td>Adv.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5218  30 Boatman</td>
<td>++</td>
<td>11 yrs.</td>
<td>++</td>
<td>-</td>
<td>6 cm.</td>
<td>4%</td>
<td>Adv.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5295  23 Farmer</td>
<td>++</td>
<td>4 yrs.</td>
<td>++</td>
<td>+</td>
<td>19 cm.</td>
<td>4%</td>
<td>Adv.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8609  25 Farmer</td>
<td>++</td>
<td>10 yrs.</td>
<td>++</td>
<td>-</td>
<td>16 cm.</td>
<td>4%</td>
<td>Adv.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5277  24 Farmer</td>
<td>++</td>
<td>3 mos.</td>
<td>++</td>
<td>+</td>
<td>4%</td>
<td>Adv. + T.B. Peritonitis.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8858  37 Farmer</td>
<td>++</td>
<td>5 mos. (diarr.)</td>
<td>0</td>
<td>-</td>
<td>3 cm.</td>
<td>2% Early</td>
<td>Adv.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6704  40 Boatman</td>
<td>++</td>
<td>1 yr. (spl.)</td>
<td>++</td>
<td>-</td>
<td>6 cm.</td>
<td>2%</td>
<td>Adv. ?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8267  25 Farmer</td>
<td>++</td>
<td>2 yrs. (diarr.)</td>
<td>0</td>
<td>8 cm.</td>
<td>10 cm.</td>
<td>1% Mod. Adv.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8670  23 Farmer</td>
<td>++</td>
<td>2 yrs. (diarr.)</td>
<td>+</td>
<td>-</td>
<td>tr. Adv.</td>
<td>Anemia +</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8465  33 Clerk</td>
<td>++</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0% Early, Ova. no symptoms</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table II. Data on 22 cases of Schistosomiasis in whom the P.T.P. Test was done.

*Since first symptoms of Schistosomiasis were noted by the patient, diarrhoea, ascites, splonomegaly.
THE OCCURRENCE OF PARATYPHOID C IN SHANGHAI

E. P. HICKS, M.B., B... (Cantab.), D.T.M. & H.
Acting Chief Pathologist
and
R. C. ROBERTSON, M.C., M.D. (Glas.), D.P.H. (Edin.)
Assistant Commissioner of Health (Hospitals), Shanghai Municipal Council

During and after the Great War, B paratyphosus C was isolated from human blood, urine and faeces on several occasions in different parts of the world. The type of disease is summarised by Andrewes and Neave (1921) as follows: "The symptoms produced by infection have been varied. At times they have resembled a paratyphoid fever of short course, in other cases they have been those of acute gastro-enteritis or dysentery, in others again the phenomena have been those of an acute septic condition, while in some they have been chiefly pulmonary, taking the form of bronchitis and pneumonia. Intestinal ulceration has been sometimes present, but often absent, and the bacillus has seldom been cultivated from the stools, though not infrequently from the urine. The mortality has been high in some outbreaks, low in others."

For some time a suspension of B. paratyphosus C has been included in the Widal reactions performed by the Health Department of the Shanghai Municipal Council, and the results have given rise to a suspicion that the disease appears occasionally in Shanghai. Between January 1st 1926 and June 30th 1927, out of 1583 Widal reactions, nine were negative to typhoid and paratyphoid A & B, while giving with C a titre of 30 or over. The Dreyer technique was used, with the exception that the agglutinability of the suspensions was not adjusted to the Oxford standard. In all nine cases a request was made to the doctor attending the patient to send blood and stools; but in only two cases was there any response. From one of these an organism was isolated by blood culture which appeared to be B. paratyphosus C. It was therefore examined more thoroughly and is described here, as it is important that it should be recognised as a possible cause of disease locally, though the exigencies of routine work have not allowed the serological examination to be as complete as might be desired.

CLINICAL REPORT

Chinese Police Constable 1179 joined the Force in June 1912. He had in the autumn of the same year an attack of dysentery lasting two weeks, presumably of bacillary type. During his fifteen years subsequent service he was in good health, his medical history sheets only showing a few entries for minor complaints such as toothache, etc.
On 8 5.27 he was admitted to hospital with a small ischiorectal abscess. This was incised the next day.

On 11.5.27 he complained of pain on micturition; the urine was cloudy. The sediment contained pus, stained smears showed gram-negative diplococci and some streptococci.

On 14.5.27 he had pain in epigastric region and onset of fever with troublesome hiccough. The ischio-rectal abscess was clean and there seemed no particular reason to associate the febrile condition with gonorrhoea. His lungs were examined, but nothing beyond a slight bronchitis was found. He had no cough or expectoration.

On 16.5.27 the W.B.C. were estimated as 12,800. The urine was still cloudy with a few prostatic threads in second glass. Patient was put on Urotropine. The spleen was found to be just palpable. Tongue furred and temperature of the nature of a continuous fever 102°F.

Patient's condition remained about the same for next three days.

On 21.5.27 a blood culture was made in order to find out if some form of septicaemia could be demonstrated.

The general condition of the patient gave rise to the suspicion of a blood infection of some kind. He became torpid and difficult to rouse. The clinical diagnosis lay between an enteric fever or an ascending infection to the kidney with suppurative nephritis. Urine examination showed no renal epithelium. The abdominal tenderness was not localised.

On 25.5.27 Dr. Hicks reports from examination of Blood culture:—

"An organism of the enteric group probably Para C has been isolated. Will you please send blood for a widal reaction."

Blood was sent the same day for agglutination with the following result:—

"Typhoid.........1,000. Para A.........negative. Para B.........50. Para C.........not done."

In this connection it should be pointed out that patient received anti-typhoid inoculation 21.11.26.

During the last four days of patient's illness his temperature fell gradually, but pulse became weak and rapid. No haemorrhages were demonstrated.

On 26.5.27 patient died—His relatives refused consent to an autopsy.

A specimen of blood was withdrawn from a vein a few hours after death for culture, and a portion of stool for examination.
The blood after death showed the presence of a similar enteric group bacillus, whilst the stool culture demonstrated a bacillus of the Flexner dysentery group.

**Bacteriological Report**

The organism derived from the blood before death is referred to as 1179-1, that obtained after death as 1179-2. Stool culture gave an organism of the Flexner group of dysentery bacilli, but no Salmonella.

Among the stock cultures in the laboratory was *B. paratyphosus* C East Africa. This was received from the National Collection of Type Cultures in London and is described in their catalogue as being of the group "B. paratyphosus C Hirschfeld (Salmonella, serological type Eastern Hog Cholera)." "It was isolated by Garrow (1920) in Portuguese East Africa by blood culture on the fifteenth day from a case of fever resembling enteric. This organism was compared culturally and serologically with 1179.

**Cultural Reactions**

All are Gram-negative bacilli of the coliform type.

<table>
<thead>
<tr>
<th></th>
<th>East Africa</th>
<th>1179-1</th>
<th>1179-2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Glucose</td>
<td>AG</td>
<td>AG</td>
<td>AG</td>
<td>one day</td>
</tr>
<tr>
<td>Mannitol</td>
<td>AG</td>
<td>AG</td>
<td>AG</td>
<td></td>
</tr>
<tr>
<td>Maltose</td>
<td>AG*</td>
<td>AG</td>
<td>AG</td>
<td>after</td>
</tr>
<tr>
<td>Saccharose</td>
<td>Alk.</td>
<td>Alk.</td>
<td>Alk.</td>
<td>14 days</td>
</tr>
<tr>
<td>Dulcitol</td>
<td>AG</td>
<td>AG</td>
<td>AG</td>
<td></td>
</tr>
<tr>
<td>Arabinose</td>
<td>AG</td>
<td>Alk.</td>
<td>Alk.</td>
<td></td>
</tr>
<tr>
<td>Indol</td>
<td>Neg</td>
<td>Neg</td>
<td>Neg</td>
<td>5 days</td>
</tr>
<tr>
<td>Methyl Red</td>
<td>Acid</td>
<td>Acid</td>
<td>Acid</td>
<td></td>
</tr>
<tr>
<td>Voges-Proskauer</td>
<td>Neg</td>
<td>Neg</td>
<td>Neg</td>
<td></td>
</tr>
<tr>
<td>Lead Acetate</td>
<td>Blackened</td>
<td>No change</td>
<td>No change</td>
<td></td>
</tr>
<tr>
<td>Milk</td>
<td>Acid, no clot</td>
<td>Acid, no clot</td>
<td>Acid, no clot</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alk. in 14 days.</td>
<td>Alk. in 7 days.</td>
<td>Alk. in 4 days.</td>
<td></td>
</tr>
<tr>
<td>Motility</td>
<td>Motile</td>
<td>Motile</td>
<td>Motile</td>
<td></td>
</tr>
</tbody>
</table>

**Sero logical Reactions**

Agglutinating sera were prepared for 1179-1 and East Africa, and were absorbed with suspensions of the same organisms. The results are given below.

*Acid in 24 hours, gas in 72 hours.
Alk. = alkaline. AG = acid and gas.
Absorption tests of 1179-1 & East Africa.

<table>
<thead>
<tr>
<th>Suspension agglutinated</th>
<th>Serum 1179-1</th>
<th></th>
<th>Serum East Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unabsorbed</td>
<td>Absorbed by</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1179-1</td>
<td>East Africa</td>
<td></td>
<td>1179-1</td>
</tr>
<tr>
<td>East Africa</td>
<td>16,000</td>
<td>&lt;30</td>
<td>20,000</td>
</tr>
<tr>
<td>1179-1</td>
<td>10,000</td>
<td>&lt;30</td>
<td>10,000</td>
</tr>
</tbody>
</table>

Titre of sera against 1179-2 and three other Salmonellas

<table>
<thead>
<tr>
<th>Suspension Agglutinated</th>
<th>Serum 1179-1</th>
<th>Serum East Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>1179-2</td>
<td>6,750</td>
<td>7,650</td>
</tr>
<tr>
<td>B. paratyphosus A</td>
<td>&lt;30</td>
<td>&lt;30</td>
</tr>
<tr>
<td>B. paratyphosus B</td>
<td>480</td>
<td>620</td>
</tr>
<tr>
<td>(Shottmüller-Bainbridge)</td>
<td>&lt;30</td>
<td>40</td>
</tr>
<tr>
<td>B. enteritidis (Gaertner)</td>
<td>&lt;30</td>
<td>40</td>
</tr>
</tbody>
</table>

1179-1 was not agglutinated by the sera of B. paratyphosus A, B and enteritidis, in dilutions of 1 in 30, 60 and 120.

The absorbing dose was a saline suspension prepared from nutrient agar cultures 24 hours old. The first dose was in each case 500,000 million organisms per cc. of undiluted serum. As this did not effect sufficient absorption, the sera were absorbed again with a dose of 250,000 million. The table gives the results of the second absorption. Absorption was carried out for four hours in the incubator at 37°C; agglutinations by the macroscopic method in a water-bath for two hours at 55°C using a veal broth culture killed with 0.1% formal-saline.

All the cultures were smooth, but the specific-nonspecific phases were not investigated.

The exact identification of any Salmonella involves a very complex research. Recent work by Bruce White and Savage (1925) and by Bruce White (1926) places B. paratyphosus C, as isolated in various parts of the world, and including the East African strain, in a group with B. suipestifer, which is described as the Suipestifer-Hirschfeld or Suipestifer-Paratyphosus group. The serological reactions of 1179-1 and East Africa show that they are very closely related, though there is apparently a small difference in antigenic composition. There is, however, little doubt that 1179-1 and 1179-2 are members of the Suipestifer-Hirschfeld group.

If they are regarded from the point of view of cultural reactions there is no obstacle to this grouping, for the only differences are those
Occurrence of Paratyphoid C in Shanghai

which are found between organisms which are recognised as belonging to the group. These differences are in their reactions with dulcitol, arabinose and lead acetate.

**Dulcitol.** East Africa produced acid and gas after 24 hours incubation. 1179-1 produced acid and gas after seven days, but after fourteen daily subcultures it began to ferment dulcitol in 24 hours. 1179-2 formed acid and gas after two daily subcultures in dulcitol.

**Arabinose.** East Africa fermented this sugar in 24-48 hours with the formation of gas, whereas 1179-1 and 1179-2 produced no change after fourteen days incubation or after fourteen daily subcultures in arabinose.

**Lead acetate.** East Africa caused distinct blackening in 48 hours, while 1179-1 and 1179-2 caused no change after seven days.

These are all variations found in the Suipestifer-Hirschfeld group, and as far as they can be utilised for the purpose, would place 1179 in the American group of Bruce White.

To determine the exact position of this organism it would be necessary to examine the specific and non-specific phases and to compare them with the same phases of other Salmonellas. But the examination made, though limited by the demands of other work, is I think sufficient to place it in the Suipestifer-Hirschfeld group which includes those organisms known as B. paratyphosus C.

It is unfortunate that permission for a post-mortem was refused and that the Widal reaction performed before the patient's death, contrary to the usual custom, did not include paratyphoid C. The blood obtained after death was quite unsuitable for agglutination.

**Summary.** An organism was isolated on two occasions, by blood culture, from a fatal case of fever in a Chinese. Cultural and serological examinations placed it as B. paratyphosus C, a member of the Suipestifer-Hirschfeld group.

We are indebted to Dr. C. N. Davis, Commissioner of Health of the Municipal Council of Shanghai, for permission to publish this paper.

**REFERENCES**


THE PROBLEM OF ACCLIMATIZATION OF THE JAPANESE IN MANCHURIA*

U. MIURA
From the Manchuria Medical College

The term "Acclimatization" is generally used for becoming accustomed to a tropical climate but in this instance it is used to indicate methods of habituation to the cold climate in Manchuria.

There is a great difference between the climate of Japan and of Manchuria. The former, being of insular character, has a mild winter and there are no provinces except in the northern part, where the average temperature in the coldest month falls below 0° C. In summer, however, it is very hot, and in addition the humidity is very high. The average relative humidity ascends over 80% in most parts of Japan.

Thus the summer is said to be the worst season in Japan, and the question for the people living there is how to adapt themselves to that season. Manchuria has a continental climate. The difference between the highest and lowest temperature is very great either in a day or a year. The rainfall is small (about 1/3 of Japan) and the atmosphere is generally dry. Owing to this dryness, the summer climate can easily be borne in Manchuria, for notwithstanding the height of temperature it is not much different from that in the central part of Japan. The worst season in Manchuria is the winter because of the severe cold, and also the long duration.

For example, in Mukden, the average temperature is about —13°C. in January and —10°C. in February. Almost no city in Europe, even Moscow or Leningrad can compare with Mukden in the extremity of its cold. In America, Alaska is the only place where the winter is as cold as in Mukden. In a word, in Japan the worst season is the summer and in Manchuria the winter, and this difference in climate is one of the most important hygienic problems for the Japanese in Manchuria.

Consequently the construction of houses due to the difference in climate between Japan proper and Manchuria becomes a practical difficulty. Houses in Japan are framed with wood and equipped with thin walls made of sand and clay. The windows are furnished with screen paper instead of window glass. These characteristic features of Japanese houses are excellent from a hygienic viewpoint in that ventilation spontaneously takes place owing to considerable leakage.

*Read at the China Medical Conference in Peking, September, 1926.
through windows and doors, and also through the screen paper. The rate of ventilation of houses in Japan is several times that of a house of occidental style with single windows. This characteristic of Japanese houses is excellent as well as defective, for although it keeps the indoor air pure, it prevents satisfactory heating. The latter however is not of much importance in Japan where the winters are not very cold.

On account of this free ventilation, vitiation of the indoor air rarely occurs in Japanese houses. Consequently most Japanese are almost ignorant of the necessity for keeping indoor air pure when they live in non-Japanese dwellings.

In Manchuria, the Japanese are compelled by the climate to live in houses of occidental style. Natural ventilation in these houses is even less than in houses of occidental style in Japan, as the houses in Manchuria are provided with double windows. Living in such houses, the Japanese are not yet aware of the danger of the vitiation of the air, and they are accustomed to paste paper on the cracks around the windows in order to prevent any draughts.

Knowledge on satisfactory temperature and humidity has recently been developed by many research workers, and it is gradually permeating the Japanese in Manchuria, but the methods of ventilation and habits of fresh air are still unknown to many. The latter are too nervous and afraid of the cold in Manchuria and at the same time are insensitive to vitiation of the air.

According to the results of our examinations, the amount of carbonic-acid in the air of their houses is usually above 1% during the winter days which is generally recognized as the safety limit. The rate of the natural ventilation of these houses is certainly less than once an hour. Even provided that the air is totally ventilated once an hour, every person must occupy a space of about 30-40 cbm in his house in order to keep the indoor air always pure. That is impossible especially for the people of the lower classes.

This problem is in question not only during the winter but also in the spring because the people stay at home and do not remove the seals on the windows till May or June on account of the wind and dust in these months. Among many alleged harmful influences of this custom upon health, I must cite tuberculosis as one of the most important. According to a report from the Statistical Bureau of Kwantung Province, the death-rate from Tuberculosis amongst Japanese in Manchuria is less than that in Japan. But I think this does not indicate the true situation of the tuberculosis question in this province,
because very many patients go home to Japan at an early stage of the illness. In fact there are many proofs that cases of pulmonary tuberculosis are more numerous in Manchuria than in Japan. For example, a statistical report of the Mutual Relief Society of the S.M.R. Co. shows that the death-rate from pulmonary tuberculosis amongst their employees is about 50% higher than that of men of the same age in Japan.

This fact may be caused partly by the direct influence of the cold climate, as the death-rate from all diseases of the respiratory organs is slightly higher in Manchuria than in Japan. But the chief cause, I think, must lie in the fact that the people confine themselves in the vitiated air of their houses almost half the year.

Next I would draw attention to intoxication by carbon-monoxide gas, Japanese are accustomed to use charcoal stoves for heating and cooking. In Japan they are used in houses without any chimney, so that the gases produced spread in the room. A large quantity of carbon-monoxide is contained in these gases even when the charcoal is burning well, as has recently been proved at the Hygienic Institute of Kyoto University. However, intoxication rarely occurs in Japan, because of the natural ventilation.

In Manchuria, some of the Japanese still use charcoal stoves for heating and cooking, and cases of intoxication have been met with occasionally. This intoxication is caused not only by using a charcoal fire but also through the shutting up too early or closely of the damper of Petica, which is popularly used as heating apparatus among the Japanese in Manchuria, or by leaking smoke of the Ondor in the Chinese houses.

In order to avoid ill health, we must first draw the attention of the Japanese to the importance of ventilation and of fresh out-door air, as well as the giving up of the use of the charcoal fire. Secondly, reform of their clothing is very important. The Japanese costume is very unsuitable for the severe cold in Manchuria, though it is comfortable in the hot summer, especially for Japanese women, a larger proportion of whom adhere to the native style and can scarcely go out-doors during the winter.

Also they cannot give up the use of the Japanese mat, for it is necessary for the sitting life of Japanese. It is superior in the insulation of heat, but inferior in keeping the air clean as it produces dust. It is unhygienic especially for tuberculosis as it is used in the less ventilated houses. All these are national customs and difficult to reform.
Posture in Preservation of Perineum

On the other hand, we must persistently look for simple and practical methods of ventilation and heating, both hygienic and economic and give suggestions in regard to the construction of houses. We are carrying out some experiments so as to meet these questions, which I shall report on some other occasion.

At any rate, it is a difficult problem for Japanese to acclimatize themselves to the climate in Manchuria. I think they are able to season themselves more easily to the tropics, considering the character of the climate in Japan and the mode of living of Japanese. But all these problems are not only for Japanese, but for all nationalities who settle in a climate as cold as Manchuria. Research along lines of physiological adaptation to cold climates is very important, especially as it has not progressed as far as research in tropical hygiene.

POSTURE IN THE PRESERVATION OF THE PERINEUM

Rosetta Sherwood Hall, M.D.
Lillian Harris Memorial Hospital, Seoul, Korea

For a few years past my attention has been called to the comparatively few torn perineums among the Korean women who visit our gynaecological departments in Seoul and Chemulpo, and prior to this I had noticed the same in Pyong Yang. And I am trying to ascertain why there are better results among women unattended by doctors or midwives in Korea than in hospital work in U. S. A.?

I have now only the records of some 3000 cases to which I can refer, and sometimes I have neglected to make notes, but I find in the cases noted that about 75% were delivered upon their knees, Korean custom; and, only 20% delivered this way were torn a little; and they usually gave history of a too rapid labor; 55% had no tears!

Of the whole number 25% were delivered with the mother lying upon her back, and they were almost always torn, some quite badly; only 3% of the whole number delivered that way had no tear!

With a few exceptions these delivered upon the back had either a midwife or a physician; of course, they may have been the more difficult or abnormal cases?

It is stated that 20 to 30% of primiparae receive a perineal tear in hospital practice in U. S. A.

*Read at the China Medical Conference in Peking, September, 1920
Since this injury to the perineum is rather less when primiparae are delivered by the Korean method in their homes, I am forced to the opinion that the position of the mother has much to do with it.

No doubt as Parvin says "the majority of perineal tears occur from too rapid deliveries, the child being expelled before there is sufficient dilatation; the force is too great and the time too short, so that the soft parts are not stretched but torn."

"Supporting the perineum" is a misnomer—all our care should be directed to giving it time to gently stretch—moderate the expulsive efforts by position, or chloroform, if necessary, and hold back the head when it receives too strong a propulsion; this is the secret of doing something really useful in obstetrics.

As Prof. Anna Broomall taught us to attain these objects, one of the first things is to have the patient lie in Sims' position; the advantages are lessened abdominal pressure, and in this position the condition of the perineum may be known better by actual inspection. Given a rigid perineum, personally I like applying hot compresses to soften it and to keep up its circulation; and these can be applied so much better in Sims' position (with a bundle of cotton wrapped in oiled-paper or silk between the patient's knees) than when the patient is on her back; and, I am sure more perineums are preserved this way—the object being to deliver the occiput first and prevent extension of the head from taking place until the biparietal diameter is free; the natural tendency to extension is less in Sims' position, and may be prevented by the tips of the fingers of your left hand making the head hug the symphysis until the occiput protrudes and the wide posterior part escapes—preferably stripping the perineum back from it with the right hand between the pains.

From my observation and notes of Korean women, I believe that delivery in Sims' position is but an adaptation of the Korean custom to better suit our beds or delivery tables. In their homes, upon the Korean floors, I prefer to deliver patients upon their knees, and believe that it is the primitive way! It is the ordinary position of the pelvis in the labor of four-footed animals; and perhaps more research in the customs of primitive peoples on this question will reveal that Korea has not been alone in this safe custom—for when I think of the prayer of pious old Lange of whom Dan Crawford wrote, it would appear Africans are delivered this way. In the common positions of the body the modern way of delivery of the mother upon her back causes the baby to face the earth, though the forehead and eyes do turn a bit heavenward for a brief moment in extension.
I will close this brief study with the prayer referred to, which I am sure will help us in not wanting to deliver our patients lying upon their backs.

"O God, we lift up our eyes to Thee. Why should we not lift up our eyes to Thee? When our mothers bore us we were born with our baby faces looking up to the sky and not down to the dirty earth.

And then, Lord, the shame of it, we who get such a good start in being so born with eyes toward God, and back toward the world; alas, away we go turning our backs to Heaven and our faces to hell! But, Lord, we bless thee for a second birth as well as a first one, and we are glad that we are again looking up and not down, yes, up to God and not down; up to the light and not down to darkness."

**DISCUSSION**

*Dr. J. Preston Maxwell,* I think that Dr. Rosetta Hall takes too gloomy a view of modern practice. I disagree with her both on the question of position and also on that of statistics. Two questions have to be considered in the birth position, one asepsis, and one ease of management. The kneeling position is a most difficult one for the attending physician, and the back position is much superior to the lateral one as one is able to prepare a clean field very easily, and one is not working with the anus between oneself and the child's head.

When one comes to statistics I would commend to your attention a paper by Dr. Jensen in French on "ruptures of the perineum." You will find it in the 3rd volume of the records of the Obstetric and Gynecological Clinics of Copenhagen. He there describes Prof. Gammeltoft's method which I am now using, and which I consider much the best method of managing the perineum. His statistics are 22.4% of ruptures in primiparae and only 12.8% of ruptures in secundiparae. These figures compare very favourably with Dr. Hall's 20% over primiparae and multiparae combined, his numbers being calculated over twice as many cases as Dr. Hall's series.
Clinical Notes

FRACTURE OF FEMUR
Report of Case

J. A. Curran, M. D. Fenchow, Shansi.

Male infant aged three months, child of local official in the County Yamen.

The baby entered the hospital on July 9, 1927 with the unusual history that ten days earlier, its eight year old sister had twisted its left leg and broken it. Since then there had been swelling of the left thigh and great pain on any movement of the leg. The child nursed very poorly.

On admission it was found to have a "green stick" fracture of the middle third of the left femur which showed little or no union and considerable anterior bowing. The child was very fretful and had obviously lost considerable weight.

It was decided to try vertical Buck's Extension with a modified Balkan frame and the beneficial effect was immediate. The baby was comfortable at once, began to nurse regularly and to improve in its general condition. A week later the bowing had straightened considerably. On August 6th the leg began to swell from pressure of the traction bands and the latter were removed. While there was still some anterior bowing there was now fairly firm union and examination of the leg caused no pain. A firm spica bandage was applied and the child was taken home on the 8th. On the 23rd the case was seen at its home. The leg showed firm union at the site of the fracture and the baby generally was in excellent condition.

DEATH FROM QUININE POISONING

The following case is unusual, and should, I think, be put on record. A pale, stout lady, 50 years of age, came to the seaside for a restful holiday. Just before her death she stated that in order to ensure sleep she had taken a large number of tablets of quinine. When first seen she was in a state of collapse, with bad colour and very feeble pulse. It is estimated that she took forty-eight 5 grain tablets of quinine bisulphate, presumably continuously during the night. She rallied a little with restoratives, but died while the stomach was being washed out.

The post-mortem examination revealed no signs of organic disease. The coroner gave a verdict of death due to heart failure, the result of taking a large quantity of quinine. Two hundred and forty grains is certainly a large dose to be taken in a few hours, but I can find no reference to a death from quinine poisoning in my standard works on toxicology.—B. M. J. 9 July, 1927
Elaborate methods of examining dysentery stools under a microscope cannot be undertaken in many hospitals where the routine work is already more than the staff can well cope with. Many methods which demand time and a skilled microscopist have been described. The following description is of a simple method of making a preliminary examination.

First, place a small drop of normal saline in the centre of the slide, then with a match, or other convenient instrument, work in a little of the faecal matter, and cover with a cover-glass.

Using a low power ocular, and 1/3rd objective, focus by means of the coarse adjustment screw. Then close the shutter to cut off all bright light, and focussing up and down with the fine adjustment screw pick out small bodies which appear as bright ‘stars’. (Bubbles also appear as bright stars, but one soon learns to disregard them, and careful placing the cover-glass avoids bubbles and confusion) Having centred a ‘star’, open the shutter, turn on the 1/6th objective, focus, and examine the morphological character. If examination does not reveal amoebae or amoebic cysts, then turn to the 1/3rd objective and try again. In this way the whole smear can be quickly examined, and the presence or absence of amoebae in the given smear decided.

Methods of staining, and of more detailed examination have already been described. (C. M. J. xxxix no. 2. J. F. Kessel.)

The points in this method to which I wish to call attention are (1) the use of the shutter, and (2) the identification of the ‘stars’ by means of the low power objective.
The China Medical Journal

Editorials

THE HOSPITALS

In the Section devoted to Association News we print the third and concluding article on the present position of Medical Missions in China. In the former papers we reviewed the situation as regards the hospitals in the southern provinces and the medical schools throughout the country. In this last article we deal with the position of the hospitals in the northern provinces.

The position in the north will be seen to be more reassuring than that in the south, but we trust that all over China the situation will gradually improve. As regards the two extremes of north and south this is already taking place, but unfortunately there are few signs of any marked change in Central China at present.

THE PRAYER CYCLE

At the close of last year a Prayer Cycle for the Hospitals under the direction of the Members of the Missionary Division was issued, and from correspondence since received we believe that this was highly appreciated. In view of the enormous number of changes during the current year and of the fact that these are largely of a temporary nature, and continually altering, it is impossible to issue a revised cycle for 1298. A new edition will however be prepared as soon as conditions allow.

An interesting fact has recently been brought to our notice which we are sure the Members of the Missionary Division will appreciate as showing the value of action and reaction between sister associations with common aims.

The idea of the Prayer Cycle for Chinese Hospitals originated in a similar Cycle for Indian Mission Hospitals, a copy of which was sent to us with the Indian Medical Missionary Journal. The value of this was recognised, and we had no hesitation in expressing this in the sincere flattery of imitation. We found, however, that we had to alter the actual form which the Indian cycle took, for use in China. India has now paid us the compliment of imitation. We have recently received a copy of their new Prayer Cycle largely moulded on the form issued by our Missionary Division.

We regret that the circumstances of this year prevent our attempting to go one better on the new Indian edition, but here surely is a form of rivalry which is a delightful expression of a common aim and sympathy.
NOMENCLATURE OF DISEASES

Under Book Reviews will be found an account of a new publication of the Peking Union Medical College with this title. As full particulars of the book are given we shall not refer to it in detail here. The whole subject however is one that deserves much more attention than it usually receives. Not far short of a hundred hospital reports are annually published in China, practically all of them are interesting and some of them are of great value. Many of them publish lists of diseases and we have no hesitation in saying that these might be of enormous value to the student of nosogeography and by giving a true knowledge of the distribution of diseases in China might react again to the profit of every hospital in the country. They are not however of any great use mainly for two reasons. There is no agreed nomenclature which covers and classifies the diseases enumerated and in some cases the terms employed are useless and even confusing.

Many examples might be given. We will confine ourselves to two to illustrate these two propositions.

Very frequently we find such an entry as: Tumour of the Neck. Now tumours of the neck are of very frequent occurrence, inflammatory and non-inflammatory, innocent and malignant, cystic and solid, primary and secondary. What possible use therefore is such a description as tumour of the neck? On the other hand tumours of the neck are really very interesting out here. Sarcomatous growths in the neck would appear on first sight to be extraordinarily common. Is this the case? Carcinomatous growths are far from rare. What is the origin of these? The answers to any questions of this kind lead eventually to better diagnosis and therefore better treatment. Further the neck is sub-divided into quite a number of areas where tumours of different natures commonly arise. Again what value is such a vague description as tumour of the neck?

Further, diagnoses actually given may be positively misleading. Cancer of the Uterus is quite a common entry in hospital reports. Now in ordinary parlance cancer of the uterus is taken to imply cancerous disease of the body of the uterus, whereas we find that it is quite commonly employed in these reports to indicate cancer of the cervix. Indeed the absence of any commonly accepted nomenclature is one of the most serious detractions from the value of the average hospital reports in this country.

We freely recognise that it is impossible for a small hospital with limited pathological facilities to adopt a minute and extensive classification of diseases, but it should not be impossible to have a simplified system of nomenclature for the small institutions which would be of
great value as far as it went, while for the larger hospitals such a nomenclature as has been adopted in Peking might be made of general use.

We trust that very serious consideration will be given to the subject of hospital reports at the next conference of the Association.

APPENDICITIS

There are few diseases the incidence of which in China have been more warmly discussed than has Appendicitis. The subject has again been brought to our notice by an article in this Journal from the pen of Dr. J.A. Snell.

The opinion of the large majority of surgeons in China is that the disease is relatively uncommon—not absolutely rare—but uncommon as compared with the disease in Western lands and as compared with the incidence in foreigners in this country.

This is borne out by the experience of not a few of those who have had the largest experience of abdominal surgery among the Chinese.

In considering this, as all other questions of nosogeography in China, the extent of the country has to be remembered and the varying conditions in different regions. It is an undoubted fact that appendicitis is much more common in some countries of the West,—America for example—than it is in others. It is possible that the same increased incidence is to be found in certain areas out here, and among these may be south Kiangsu from which region come the strongest supporters of the theory that the Chinese are in high proportion sufferers from appendicitis.

Dr. Snell omits from his tables one that would have been of great interest. We should like to see a table of the proportion of cases of appendicitis according to race, giving the percentage of cases to the numbers of each race coming for treatment during the years under review. This may be impossible but if it could be given it would be instructive.

In Shanghai during 1926 there were 227 operations for appendicitis in the General Hospital (Foreign) among 4074 inpatients, a percentage of 5.6. During the years 1925-1927 at the Shantung Road Hospital (Chinese) there were 23 operations for appendicitis among 8091 in-patients, a percentage of 0.28. At St. Luke's Hospital (Chinese) the figures for appendicitis for 1925-1926 were 5006 inpatients and 27 cases, a percentage of 0.54. Even after allowance has been made for the fact that foreigners are likely to be much more willing to submit to operation than are Chinese the disproportion is still enormous.
We note further that Dr. Snell considers Ascaris infestation an important cause of appendicitis, but this seems to us an extremely doubtful proposition. The infestation with Ascaris runs up in many parts of China to 90 per cent and over of the general population, whereas in not a few of these areas we know from the observation of physicians of large experience that appendicitis is rare. It seems to us that this alone rules Ascaris out as a common cause of the disease. The whipworm which actually attaches itself to the mucous membrane of this part of the bowel would logically seem much more likely to cause trouble in the appendix, but again and again in operating on the caecal region we have ourselves seen whipworms in large numbers with their heads embedded in the mucous membrane whereas the appendix has suffered in no way from their presence. The incidence of appendicitis is probably rising among the Chinese, that of ascaris infestation should be falling, and certainly in many areas could not rise.

MEDICAL DEFENCE

Our notice has been called to the case of a Chinese Doctor in South China who has been accused of criminal assault on a patient while under an anesthetic in his surgery. The Doctor has been thrown into prison. On the other hand his fellow practitioners are convinced that a gross miscarriage of justice has been perpetrated and have appealed to the local authorities and to the Government in Nanking for a re-trial of his case.

That such cases are sure to arise from time to time is certain from the experience of the medical profession in other countries, and it is high time that the profession in China combined to form a Defence Association to deal with them when they occur. Further an Association of this nature might be able to bring pressure to bear on the authorities to formulate laws governing medical practice, as such appear to be absent from the Chinese code.

At the same time a word of warning is not uncalled for. There is in our experience a certain laxity in practice out here which lends itself to the designs of evil-minded schemers and blackmailers. The rule is well recognized at home that no examination of women patients and no minor operations of any kind should be performed without the presence of a nurse or other responsible person in the room at the time. This rule is not as strictly enforced here as it should be, but it obviously is the only method of ensuring against the occurrence of such unfortunate incidents.
In previous articles* we have dealt with the position in which the hospitals of Southern and Central China and the Medical Schools throughout the country have been placed, owing to the present period of political disturbance and civil war. In this last paper it is necessary to deal with the hospitals of the northern provinces so that the three articles taken together may give a comprehensive view of the whole situation.

Again it is necessary, however, to point out, especially as regards those provinces where recent fighting has taken place, that while we have done our utmost to secure accurate information of the existing situation the whole conditions are so rapidly changing that even before these notes are written and certainly before they reach our readers the statements as regards individual hospitals may be no longer correct. Happily, in respect to the northern provinces the area involved in the fighting is much less extensive than in the southern and central provinces and it is only in respect to one or two provinces that this statement applies.

As in our earlier paper we shall deal with the hospitals according to provinces.

**Manchuria**: General summary.

- Hospitals: 18
- Running normally under foreign or Chinese superintendence: 18

It is satisfactory to note that as regards Manchuria no trouble of any kind has occurred. Relations have continued harmonious in every way and the only difficulties that the hospitals have had to meet have been in connection with the serious depreciation of the local currency.

**Chihli**: General summary.

- Hospitals: 20
- Running normally under foreign or Chinese superintendence: 14
- Under temporary arrangement with Chinese staff: 4
- Closed: 1
- Looted and destroyed in fighting: 1

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Here again it is pleasing to be able to report that the large majority of the hospitals have remained unaffected by the political situation. The hospital reported as "closed" was little more than in the process of building and the serious illness of the doctor in charge, more than the political conditions, necessitated closing down. Four of the hospitals are running under temporary arrangement with the Chinese staff but we have reason to believe that the foreign physicians will be able shortly to return to these hospitals if they have not already done so. One hospital, Yung Ping Fu, was looted and destroyed by the northern troops in their attack on Marshal Feng in Peking more than a year ago.

**Shansi:** General summary.

<table>
<thead>
<tr>
<th>Hospitals</th>
<th>Running normally under foreign or Chinese superintendence</th>
<th>Under temporary arrangement with Chinese staff</th>
<th>Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
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The position as regards this province has been peculiar and in some senses unique. Shansi has long been regarded as the model province of China and this high position would seem still to be maintained. During the past year however there has been a good deal of fighting to repel invaders and one hospital, Tatungfu, Mosse Memorial, S.P.G., has been largely destroyed not, as far as we know, wantonly but because of its unfortunate position at the place of meeting of two of the contending armies. Otherwise the doctors in charge of hospitals have had to leave them on consular orders only and some difficulty has been experienced in attempts to return owing to the position of the province as a sort of wedge between the contending parties. The only hospital closed is that at Pingyang, C.I.M., Womens, where lack of staff prevented carrying on the work. Two or three other hospitals were temporarily closed but have now been re-opened and it is probable that the superintendents of the other hospitals will be now returning. Some of them have probably already done so.

**Shensi:** General summary.

<table>
<thead>
<tr>
<th>Hospitals</th>
<th>Running under temporary arrangement with Chinese staff</th>
<th>Destroyed</th>
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</thead>
<tbody>
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<td>...</td>
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</table>

This province is now to be regarded as under southern control, at least political affiliations are certainly in this direction. There are really only two hospitals in the province, one in the capital Sian, B. M. S. and a branch hospital at Sanyuan. The latter place was destroyed by the troops in the fighting of last year. The hospital at
Sian did a marvellous piece of work during the six months siege from which the city suffered. It was hoped even after this to be able to continue the regular work but the difficulty of getting medical stores and the impossibility of transmitting funds eventually necessitated its evacuation by the foreign staff. Work is being continued as far as possible under temporary arrangement with the Chinese staff.

**Kansu: General summary.**

<table>
<thead>
<tr>
<th>Hospitals</th>
<th>Running more or less normally</th>
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</tbody>
</table>

The one thoroughly organised hospital in Kansu is at Lanchow, Borden Memorial, C.I.M. There is also a branch hospital at Hochow. The medical superintendent Dr. George King left some months ago in charge of a party of missionaries who were being evacuated and lost his life on the way down to the coast. The work however is being continued by Dr. Rand who is superintending both hospitals.

**Shantung: General summary.**

<table>
<thead>
<tr>
<th>Hospitals</th>
<th>Running normally under foreign or Chinese supervision</th>
<th>Under temporary arrangement with Chinese staff</th>
<th>Information not obtained</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

This province has been more disturbed than has been the case with most of the provinces of northern China and for a brief period the foreign medical superintendents had to leave their hospitals on consular orders. The work of the hospitals was continued for the time being by the Chinese staffs but many of the doctors, especially the men doctors, have now been able to return. We give the figures above with considerable doubt, they correspond with the information that we have ourselves received but there is every reason to suppose that the number of hospitals given as still working under temporary arrangement will already have been greatly reduced and by the time this article reaches the hands of our readers it is probable that the large bulk will again be running normally.

**Honan: General summary.**

<table>
<thead>
<tr>
<th>Hospitals</th>
<th>Running normally</th>
<th>Under temporary arrangement with Chinese staff</th>
<th>Closed</th>
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It is hardly fair to consider Honan either under northern or southern control. For a year the fortunes of war have constantly varied here. At least four separate parties have striven for the mastery.
of the province each succeeding in holding it for a limited period. In addition, and as a natural sequel to this, large companies of bloodthirsty bandits have ravaged the country and the fiercest and most deadly fighting of the war has taken place in it.

It is scarcely surprising then that the Mission Hospitals have suffered more than in any other province and for practical purposes the whole of the work has been suspended.

One Hospital at Sinyangchow, L. U. M., reports being able to continue work under temporary arrangement with the Chinese staff. All other hospitals are closed. In one, Yenching S. D. A., a small dispensary is still kept running. From yet another hospital the story comes that after temporary arrangements for running the hospital had been made, one of the doctors turned "red" and drove everyone else out.

COMMENTS

A summary of the foregoing statements gives the following totals for the seven provinces under review.

<table>
<thead>
<tr>
<th>Total of Hospitals</th>
<th>Running normally under permanent staff foreign or Chinese or frequent supervision</th>
<th>Under temporary arrangement with Chinese staff</th>
<th>Closed</th>
<th>No information</th>
</tr>
</thead>
<tbody>
<tr>
<td>84</td>
<td>49</td>
<td>18</td>
<td>16</td>
<td>1</td>
</tr>
</tbody>
</table>

Under "closed" must be included 2 looted and destroyed, probably more when full particulars are obtained from Honan.

It should be noted that of the 16 hospitals closed no fewer than 12 are in the province of Honan. It should also be noted that with regard to the 18 hospitals running under temporary arrangement with Chinese staff, the medical superintendents of several of these expect to be able to return to their hospitals shortly, some probably have already done so.

GENERAL REVIEW

We feel that it is necessary to give some comparison of the situation under the northern and southern governments in order to provide any true general view of the position of the hospitals.

We have no desire or intention to express any opinion whatever on the political situation from the point of view of politics but let the figures below speak for themselves.

From the following table we have excluded the province of Yunnan as we have no accurate information of the position of the
hospitals there and the province of Honan which has been the cockpit of fighting of all the parties and for the position in which no one party can be held responsible. The provinces of Shensi and Kansu have been included in those under the southern government as their political affiliations are evidently in this direction. In any case the number of hospitals in these provinces is so small that their inclusion makes little difference. One hospital in Shantung of which we have failed to get information is also not included.

<table>
<thead>
<tr>
<th></th>
<th>Under Southern Government</th>
<th>Under Northern Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total of Hospitals:</td>
<td>165</td>
<td>70</td>
</tr>
<tr>
<td>More or less normal:</td>
<td>35 = 21.2 per cent</td>
<td>49 = 70 per cent</td>
</tr>
<tr>
<td>Running under temporary arrangement:</td>
<td>71 = 43 ,, ,,</td>
<td>17 = 24.3 ,, ,,</td>
</tr>
<tr>
<td>Seized by military authorities:</td>
<td>4 = 2.4 ,, ,,</td>
<td></td>
</tr>
<tr>
<td>Closed:</td>
<td>55 = 33.3 ,, ,,</td>
<td>4 = 5.7 per cent</td>
</tr>
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</table>

NOTES ON A SPECIAL COURSE IN OPHTHALMOLOGY

Peking Union Medical College, July 1927
E. R. CUNNINGHAM, M.D.

During July of this year the Department of Ophthalmology at P. U. M. C., kindly instituted a course on Diseases of the Eye for several post graduate students there at that time. These students were nearly all men from mission hospitals, and came from such widely differing points in China as: the Tibetan border, Szechuan, Shensi, Honan, Fukien and Shantung.

The abundant material of the O.P.D. was used by the clinicians to demonstrate the various disorders of the Eye. Intensive methods of investigation and treatment were studied on the in-patients.

Study of the External diseases of the Eye was conducted by Dr. H. T. Pi, who very lucidly related the signs and symptoms and outlined the treatment of the most common eye troubles encountered in out patient work.

The Ocular muscles and the work of Ophthalmoscopic diagnosis were dealt with by Dr. W. P. Ling. In a series of illustrated talks and by examination of patients with abnormalities in the function of any ocular muscle or muscles and in patients presenting pathological conditions of the fundus, Dr. Ling made clear the methods of diagnosis and treatment.
Refraction and Perimetry, which the average mission doctor is called upon to use quite frequently and which are, as a rule omitted from undergraduate courses, were handled in an interesting manner by Dr. T. P. Lee. The students first practised retinoscopy on the artificial eye and then were given an opportunity to refract patients.

The students feel that the month's instruction and study will prove very valuable to them in their work and are grateful to these gentlemen, who in spite of the intense heat, found time and energy to prepare and deliver these excellent classes. It is indeed a wonderful thing for China that she has a medical school, where teachers of such fine spirit and where such excellent facilities for post-graduate work are available.

CONGRESS OF PHYSICAL THERAPY

We have been asked to make the following announcement

*Announcement*

**Clinical Congress of Physical Therapy**

**and**

**Sixth Annual Meeting**

**American College of Physical Therapy**

The American College of Physical Therapy announces that plans have been completed for its 1927 Clinical Congress of Physical Therapy and 6th Annual Meeting, to be held at the Hotel Sherman, Chicago, October 31st to November 5th.

The program is extraordinary in character. The first three days are to be devoted to a school of instruction. For this purpose the country's most prominent clinicians and teachers have been selected and intensive fundamental and clinical training will be given. There will be one day of sectional meetings, the following distinct sections being represented: (1) Medicine, Diagnosis, Pediatrics and Endocrinology, (2) Surgery, Gynecology, Urology, Orthopedics; (3) Eye, Ear, Nose, Throat, Oral Surgery.

The fifth day of the Congress will be devoted to a Joint Session. Numerous special addresses by some of the foremost leaders in medicine will be offered. These will be of general interest to all whether in one specialty or another. The closing day will be given over to hospital and dispensary clinics.

Inasmuch as physical therapy has made such rapid strides in the past few years, a gathering such as this is of vital interest to every practitioner and specialist. The program in itself is attractive but additional features in scientific and commercial exhibits, demonstration clinics, small group conferences, etc., will help to make this congress an unusual event.
Physicians in good standing in their county societies are eligible to attend as are also technicians and doctor's assistants properly vouched for.

Those contemplating attendance are urged to enrol by mail as early as possible. The fee for the instruction classes is $10.00 payable by all whether fellows of the college or not. Non-fellows of the college must pay in addition a registration fee to the assembly of $5.00. Send for program and information to Chairman, Convention Committee.

American College of Physical Therapy,
Suite 820-30 N. Michigan Ave.,
Chicago.

TSINAN MEDICAL SCHOOL

The University opened Aug 12th., in order to give students who were not here half the spring semester, a chance to make up lost time.

In the School of Medicine we now have a majority of the Faculty back and we expect soon to have some of our foreign nurses return. Of 74 medical students who might have returned, there are 64 now here and some are on the road. Difficulties of travel and even of communication have made the return of many of them a really difficult matter. So we feel very much encouraged. We have 15 men and 20 women nurses in the Hospital and expect to open the School of Nursing Sept. 10, with all the new nurses we need, 20. The regular fall term begins Sept. 13th. when we expect a new class of students—possibly 20. The local situation is quiet and we hope to carry on as usual this fall.

R. T. Shields

REPORT OF BRANCH ASSOCIATIONS

Fukien Branch.

The meetings of the Fukien Branch of the China Medical Association were held at Kuliang, on August 18th and August 20th.

At the first general meeting the usual business was transacted, the Dispensary Report was received, and Doctors Li and Yue were welcomed as new members.

The officials for 1928 were elected:

President: Dr. J. E. Skinner
Vice-President: Dr. H. Li
Secretary-Treasurer: Dr. L. H. H. Byrne
Additional members of Executive Committee, Drs. Dyer, Gossard, and Yue.

Dr. Li gave an account of post-graduate work in America in Eyes, Ear, Nose and Throat work.

At the second general meeting Dr. Skinner read a paper on the Kahn Test for Syphilis, and demonstrated it.

L. H. H. Byrne
Acting Sec, Treas. for Dr. Dyer.

Current Medical Literature

Diet and Cancer

A pamphlet with this title, which forms No. 36 of the Reports on Public Health and Medical Subjects issued at intervals by the Ministry of Health, gives an account of researches made by S. Monckton Copeman, M.D., F.R.C.P., F.R.S., and Major Greenwood, F.R.C.P., as to the incidence of cancer upon members of certain religious orders in England and Belgium. (The general statistics derived from a wider survey 'were too incomplete to justify any conclusions' being drawn from them.) In nearly all the institutions included within the scope of the inquiry, meat of any kind, if it was allowed at all, formed an almost infinitesimal portion of the normal diet; and in one order even fish or eggs were permitted only 'as an indulgence to the weak,' and that on rare occasions. The inquiry, it should be noted, had special reference to the question as to whether these dietary arrangements had any apparent effect on the cancer death-rate. The answer given by the investigators is that their analysis of the facts collected by them 'conclusively proves that fatal cancer occurs in populations abstaining from flesh food, and lends no real support to the contention that among such populations the relative incidence of cancer is low... We think that a perusal of our report will convince most impartial persons that no scientific value whatever attaches to assertions, supported merely by the vague pseudo-statistical evidence which is customarily cited, respecting the roles of certain articles of common consumption in the genesis of cancer.' That the findings of the investigators are accepted by Sir George Newman, the chief Medical Officer of the Board of Health, is shown by his statement in the preface, 'Of definite evidence supporting a direct connection between dietary and cancer, even cancer of the gastro-intestinal system, I think it is true to say that so far we have none.'—Chambers Journal. July, 1927.
IS MAGNESIUM SULPHATE INTRAVENOUSLY WARRANTED IN ECLAMPSIA?

E.M. LAZARD, M.D., F.A.C.S.

CONCLUSIONS

1. Chemical and pathologic findings indicate that in therapeutic doses, magnesium sulphate intravenously does not exert any deleterious action on the blood, nor produce any pathologic changes in the liver, but on the contrary in the active eclamptic, by a relief of the toxemia, has a beneficial effect on the blood. The one pathologic report here made demonstrates the dehydrating effect on the brain.

2. Further clinical experience with intravenous magnesium sulphate has but increased my confidence in its efficiency.

3. The experience of the past two and a half years of its use in the pre-eclamptic has demonstrated its value as a prophylactic measure in these cases. This does not mean that all cases can be carried to term without eclampsia supervening. There are many cases where pregnancy has to be terminated, especially those of the nephritic type, as is illustrated by many of the cases which we have heretofore reported.

4. No claim has ever been made that this treatment is in any sense a specific nor that with it one can expect 100 per cent success. But I do believe that, with a careful observation of cases and with the aid of MgSO₄ intravenously, the incidence of eclampsia can be further reduced and the mortality of eclampsia should be less than 10 per cent, and with the further development of this therapy a mortality of less than 5 per cent is not too much to expect.—Am. Jour. of Obstet. and Gyn. June, 1927.

CHANGES IN COMPOSITION OF BLOOD IN PERNICIOUS ANEMIA

Treated by a Diet Rich in Liver

WILLIAM P. MURPHY, M.D., ROBERT T. MONROE, M.D.
and
REGINALD FITZ, M.D.
Boston

The strikingly beneficial value of a special diet for patients with pernicious anemia has been demonstrated recently by Minot and Murphy.¹ A diet containing, among other factors, a large quantity of complete proteins in the form of liver, and which was relatively low

¹ See China Medical Journal XL 1046.
in fat, caused forty-five consecutive cases to show a prompt, rapid and distinct remission of the anemia coincident with marked symptomatic improvement, except for pronounced disorders due to spinal cord lesions.

We have studied certain changes in the composition of the blood in ten of these cases which were in the Peter Bent Brigham Hospital between November, 1925, and March, 1926. Our observations were made for the purpose of determining some of the physiologic changes that occurred in cases of pernicious anemia treated by this method. Our results are reported in this paper.

**Summary**

Changes were noted in the composition of the blood in ten patients with pernicious anemia, treated by a diet rich in liver. The results corroborate Minot and Murphy's observations that under proper dietetic care a prompt, rapid and distinct remission of the anemia is produced in each instance. The diet appeared to cause the delivery of new, young red blood cells from the bone marrow into the general circulation, as evidenced first by a prompt increase of the reticulocytes in the circulating blood. At about the time that there was evidence of a marked reaction in the bone marrow, there was a decrease of bile pigment concentration in the serum, as manifested by a fall in the icterus index. Coincidently there was an increasing red blood cell count and hemoglobin concentration, accompanied by a progressive growth in the blood tissue as a whole, as estimated by blood volume determinations.

The morphologic appearance of the red corpuscles under treatment became normal, or essentially so; the color index finally became 1 or less than 1; the average cell volume diminished and approached normal; the volume index and the "stroma" index became normal.

The diet did not produce changes in the nonprotein nitrogen of the plasma or in the plasma protein. The protein of the corpuscles, however, increased notably, and in almost direct proportion to the increasing hemoglobin concentration—*J. A. M. A.* April 16, 1927.

**GINSENG GROWING IN SHANSI**

Ginseng, which is so highly prized by Chinese medical men for its supposed health and strength-restoring properties, is not produced exclusively in Manchuria and Korea, as is generally believed. Shansi

ginseng was in use as a medicine long before the Manchurian product was known to the Chinese medical practitioner. The ginseng referred to in the Shennung *Pun Tsao* (神農本草), a book on herbs supposed to have been written by Emperor Shennung (2737-2697 B.C.), was the Shansi product, because at the time when the *Pun Tsao* was written, Manchuria was still a *terra incognita* to the writer, whether he was Emperor Shennung himself or some medical student of a later date. The chapter on Geography in the History of the Tang Dynasty (618-906 A.D.) mentions ginseng as a staple product of Taiyuanfu, the capital city of Shansi. Manchurian ginseng became popular only after the Manchu conquest of China. The fabulous prices commanded by the Manchurian product and the supposed restorative power with which it is credited are mainly due to its rarity and not improbably to its imperialistic associations, for in pre-Republicau times, Manchurian ginseng was supposed to be reserved for the use of the Emperor and his household.

To distinguish it from the Manchurian product, Shansi ginseng has assumed the name of *tangseng* (黨參), because it is produced chiefly in Luan (長治) and Liaochow (遼縣), which in former times belonged to the Shang Tang Prefecture or Circuit (上黨郡). The name "ginseng" (also tangseng) refers particularly to the root of the plant known to naturalists as *Aralia quinquefolia* (See E. H. Wilson's *A Naturalist in Western China*, Ch. IV., P. 37). It is a perennial plant with long, narrow leaves. The root has a sweetish taste.

Like ginseng, tangseng is divided into two classes by Chinese medical men: wild and cultivated. The former is supposed to possess greater medicinal value probably because of the difficulty in obtaining it. Most of the tangseng used as medicine, however, is of the cultivated variety. The growing of tangseng is an important industry to the farmers of certain districts in Shansi, where tens of thousands of catties are produced yearly. The plant is grown from seeds, which are generally sown early in April. Before sowing, the seed bed is plowed. The seeds are mixed with wood ash when sown. Germination starts in about three weeks. The bed is weeded twice at an interval of about two months after the seeds are sown. In the next year or the year after that the plant begins to flower, generally in July, and the seeds become ripe for gathering in October. Tangseng seeds are sometimes sown in autumn and the young plant grows in the winter. This is known as the "snow variety" (雪種); its growth is, however, not so rapid as is that of the spring crop.

The root of the plant becomes useful as medicine in three or four years, but the older the plant grows, the more valuable the root
Chinese druggists divide tangseng into several kinds according to age: *la seng* (老参) or old tangseng, *pei tiao*, or white variety (白条), *pin head variety* (钉头), *hung shan* variety (红山参): etc. *Ta seng* is also known as *lao seng* (老参), or old tangseng, because it is generally over 20 years old, each piece usually weighing over one catty. It is very difficult to obtain this variety of tangseng; hence it is highly prized. That grown for ten years is known as white variety and also as five-fingered variety because when the plant attains the age of seven years, lateral shoots, generally five in number, develop from the root, bearing some resemblance to human fingers. This variety is also valuable, each root being sold at about $3 per catty on the Shansi local market. *Hung shan* tangseng is obtained from a plant aged between five and six years. The root is much less developed than the other two varieties, and is sold at between $1.50 and $2 per catty. The pin head variety is the cheapest. It is dug up when the plant is only three or four years old. The root is so small and tender that it looks much like a pin. It is worth about a dollar a catty and is said to have very little medicinal value. When the roots are dug out of the earth, all the small lateral roots are removed. They are then placed on a wire-netting framework to be dried over a fire or placed on a bamboo screen and dried in the sun and air. After the roots are cut and dried, they are sorted and packed into bundles for the market.

The tangseng plant grows best in sandy loess or sandy loam soil. Its bed must be on a dry and elevated land but not too much exposed to the sun. The hill sides at Luan and Liaochow are most suitable for its growth. The bulk of the tangseng sold by drug dealers comes from these two places. Those produced at Luan are known as *Lu tangseng* (潞黨参) and those grown at Liaochow, *Liao tangseng* (遼黨參). *Lu* tangseng distinguishes itself from *Liao* tangseng by its reddish skin, which is artificially colored at the time of drying. The skin of *Liao* tangseng is white or uncolored.

Each crop of tangseng produces from 300 to 400 catties to the mow, but the whole crop cannot be gathered in one year. The bigger roots are gathered during the first year, but the smaller ones must be kept in the bed until they are fully developed. Sometimes the smaller roots may die in the bed before full growth. The gathering of a whole crop often extends to a period of four or five years, the yearly production from each mow being considerably under 100 catties. Statistics are not available as to the yearly output of tangseng from Luan and Liaochow, but an estimate puts the number of mow devoted to tangseng growing at over 30,000 in either district. The most conservative estimate of the total yearly crops in these two districts would be about 600,000 catties, which supply drug dealers all over the country.
As far as the market value is concerned, tangseng is far inferior to the ginseng of either the Manchurian or the Korean variety, but it occupies an important place in the Chinese materia medica, because it is one of the most extensively used herbs. Chinese medical men hold the belief that the wild plant yields a better root than the cultivated kind, the reason being that roots in the wilderness are generally very old. They yield much bigger roots, which are believed to be far more effective in restoring the vigor and strength of invalids than those artificially raised. The wild root fetches a higher price by far than the cultivated root, if the root be big and in perfect condition. Several thousand catties of wild roots, gathered by diggers from different parts of Shansi, are marketed yearly, but the article is not always obtainable from ordinary drug dealers because they cannot afford to pay the high prices it commands. The wild root is easily distinguished from the cultivated kind by the color and the wrinkles on its skin. The skin of a cultivated root is rough and loose-looking. The color is dull. There are not so many wrinkles on its skin as on the wild root, whose skin is fine and gives the root a neat appearance. The color is bright with a rather lustrous tone.

Taiseng (台参) is a kind of wild root growing in the mountainous regions of Wutai (五台), in the northern part of the province. It yields bigger roots and as a medicine is believed to be superior to both the products of Luan and Liaochow. It is sold at $2-$3 a catty by Taiyuan drug dealers. This variety is much sought after by drug gatherers, but its yearly product is limited to only about 1,000 catties. Some enterprising farmers have raised taiseng by artificial means, but the plant, when cultivated, does not yield such a good root, since it grows in a wild state. The market for taiseng is confined to Shansi and its immediate neighborhood, the article being little known in other provinces.

THE FINAL TRIUMPH OF MEDICINE

The further disposition of the forces (of Medicine) calls for a wider orientation of the field. The ultimate goal is something beyond mere prevention of disease, as commonly understood. The negative attitude is too restrictive. It is scientifically insufficient and unsatisfying. The final triumph of medicine will consist not in the exclusion of disease, but in the restoration to man of perfect form and natural function—the attainment of smooth activity of body, mind, and soul. Biology—anatomy and physiology—must be relied on to carry us further than pathology and therapeutics, as commonly understood. Medicine, thus enlarged, becomes a department of biology and constitutes, pro tanto, the science of human life. B. M. J. July 28, 1927.
NOMENCLATURE OF DISEASES, Pathological Conditions, and Operative Procedures in use at the Peking Union Medical College.

The Clinical Records Committee.

This is a very valuable book which, by the kindness of the Committee, may be purchased at cost price for Mex. $3.00 by anyone out here interested in this subject.

It were well if every hospital had a copy for reference and if the larger hospitals made free use of it in their records. The lack of uniformity of medical records in China is very distressing.

The main divisions of the book cover Anatomical Classification of Diseases, Etiological Classification and Operative Procedures. There are also excellent indexes.

Whether a list of operative procedures is really worth while is open to question. The changes in surgical methods are so rapid that this can never be complete, and is certain to omit procedures that some will consider of considerable importance, and include others whose day is past. Good as this list is it cannot escape this drawback. We are surprised to find such a common and valuable operation as Proctotomy omitted. Decapsulation of the kidney and enucleation-excision of the thyroid surely also deserve a place. Further we do not see why in tattooing of the cornea the operation should be specifically confined to Indian Ink.

The list of diseases is really marvellously complete, but even here there are a few omissions. If tuberculosis is admitted, why not syphilis, and surely rupia deserves to be specifically included? Septicemic plague finds no place though it is as real a clinical entity as the two other forms. In the bacteria the bacillus of contagious abortion and the spirochaete of bronchial spirochaetosis both deserve a place and in this country surely Hongkong foot should be numbered somewhere among the diseases.

Having advocated ourselves this last term it is inconsistent to complain of the attaching of personal names to diseases, but we do hope that in further editions the authors will try and restrict these more stringently. There are serious objections to this method of nomenclature and our memory is already too much strained to be able to keep them in mind. Even the authors have found this difficulty for they have one at least that appears under a different spelling in the leading medical dictionary,—Kohler's Disease.

How far in a nomenclature list for general use it is wise to be ahead of the times is rather an open question when the lists are intended for and should be made of general use. We dare not dispute the correctness of the terms employed in relation to metazoal parasites but we would humbly point out that neither Thelazia, Callipaedia, Wuchererian or Echinococcus granulosus appear in Gould's new medical dictionary recently published which is by far the largest and best medical dictionary obtainable.

Throughout this volume the terms employed are almost without exception excellent but just one or two ugly ones have crept in. We can see no excuse for substituting a mouthful like deferentitis for a euphonious word evaletus, and
autodrownage is really too horrible; hybrids are bad enough but this seems to be an attempt to reproduce a quadroon in language—a Greek prefix married to an English word and the product combined with a Latin terminal!

A book like this lends itself to criticism, but we hope that the criticisms here made will be understood in the most friendly of spirits. Despite them the book is altogether admirable, a most valuable gift to the medical profession in China and one that we hope will be very freely used by the hospitals in this country.

J. L. M.

**THE HARVEY LECTURES**

Series XXI. Various Authors

The Williams and Wilkins Co. 1927. Price $4.00 Gold

The catholicity of outlook of the Harvey Society of New York under the auspices of which these lectures were delivered may be indicated by mentioning the titles of the seven lectures contained in this volume. They are:—"On Some Recent Otolological Problems." "The Dynamics of Pepsin and Trypsin".—"The Transformation of Mononuclear Blood Cells into Macrophages, Epithelioid Cells and Giant Cells".—"The Parathyroid Glands."—"Empiricism and Rationalism"—"Historical Outline of Medical Therapy"—and "Comparative Anatomy and Neuropathology".

We are inclined to question the advisability of including in one volume such an "olla podrida". We can, for instance, scarcely imagine that there are many readers who will be interested both in Dr. Nager's most practical lecture on otology from the clinical point of view and also in Dr. Northrop's highly academic discussion of the dynamics of pepsin and trypsin,—a lecture so abounding in abstruse mathematical formulae that we doubt if five per cent of an average medical audience could follow the lecturer through its mazes.

While there are not many readers who could be expected to enjoy each course of such a varied meal with equal gusto, there are few who would fail to derive benefit from several of them. We relished particularly the masterly summary of our present-day knowledge of the functions of the parathyroid glands by Dr. J. B. Collip, and also the bird's eye view of the progress and vicissitudes of medical therapy from the time of Hippocrates to the present time by Dr. Knud Faber of Copenhagen.

To all those who are prepared to reject such courses as are unpalatable or indigestible we heartily recommend this volume.

D. S. R.

**A PRACTICE OF PHYSIOTHERAPY**

C. M. Sampson, M.D.


This book consists of thirty-four chapters, occupying over 600 pages, and deals with a large number of techniques in physiotherapy, which are explained in a simple manner so as to be of service to a doctor or institution just starting in physiotherapy.

It is not overloaded with histories of particular cases, and is written in a distinctly racy style which is even amusing in parts. Perhaps one of the best
features from the point of view of the average medical practitioner is that the author assumes a very slight knowledge of physics on the part of the reader, and gives a large number of photographs of actual treatments, with comparatively few physical diagrams.

A large section of the book is devoted to the consideration of high frequency and diathermia. The nature, production, and essentials of a high frequency current from the medical standpoint are well explained, as is also the difference between diathermia and perithermia. The author indulges in an extraordinary but well deserved diatribe against manufacturers who claim big things for machines of small capacity. He gives a clear explanation of the differences between Tesla and Oudin currents, strongly advocating the use of the latter. He is also an enthusiast for non-vacuum electrodes.

Just over two pages are devoted to infra-red rays, which the author terms ultra-red. He considers that if there is a possibility of pus in the deeper tissues, this form of convective heat is safer than the convulsive heat of diathermia. More space is devoted to the static modalities than is usual in a book of this type nowadays.

The section on ultra-violet rays is well written, but the author uses the somewhat misleading term of “quartz rays” on account of their properties, and to distinguish them from the so-called “violet rays”.

In the part of the book dealing with X-rays a lengthy paper on selective electronization is quoted, but it is probably too technical to be of much use to the average reader. The prevention and treatment of X-ray burns is explained in a very helpful way.

The chapters on galvanic and faradic currents contain several good working rules, and the comparison between the different types of interrupted galvanic and sinusoidal currents is well thought out.

Comparatively short descriptions are given of the general principles of massage and hydrotherapy.

The second part of the book is devoted to the clinical applications of physiotherapy, and the third part to general considerations, which should prove most useful to practitioners in China who have often to act as their own engineers and technicians.

S. D. S.
News and Comments

Dr. W. Venable

Dr. and Mrs. W. Venable, well-known missionary workers in China, are leaving for America to-morrow by the s.s. President Jefferson, after spending 34 years in medical missionary work in this country. Dr. Venable having accepted an offer, received by cable a fortnight ago, from the Virginia State Board of Health, of a position at the Catawba Sanatorium, the State Institution for the care of tubercular patients.

Dr. and Mrs. Venable are members of the Southern Presbyterian Mission of America. On arrival in China their first allocation was at Kashing, where Dr. Venable established the Kashing Hospital. In 1919 they were transferred to Kuling to take charge of the Kuling Medical Mission and help in establishing the Kuling Community Hospital for foreigners, a work which was carried on very successfully until early in the present year, when the incursion of the Nationalist troops made all phases of missionary work at the resort, as at so many other centres, impossible, and compelled foreign workers to flee to the ports for safety.

From 1915 to 1917 Dr. Venable held the office of President of the China Medical Association, an organization with which he has been closely associated for many years.

Since February last Dr. and Mrs. Venable have resided in Shanghai, where they have added to their very wide circle of friends, who, while regretting the causes which have led to a cessation of their activities in this land, will wish them every success in the new work upon which they are soon to enter in America.

N. C. D. N.

Dr. J. C. McCracken

At its last "commencement," the University of Pennsylvania added an additional honour to the list already held by Dr. J. C. McCracken, of St. Luke's Hospital, when it conferred upon him the degree of Doctor of Science (D. Sc.)

N. C. D. N.

Parke, Davis and Co.

Removal Notice

The offices of the Representatives of Parke, Davis & Co., have been removed temporarily to 36 Jinkee Road, 1st floor. Early this coming year it will be located permanently at No. 8 Yuen Ming Yuen Road where more commodious quarters have been secured.

Anderson, Meyer and Co.

Removal Notice

The offices of Anderson, Meyer & Co., Ltd., Drug Department, have been removed temporarily to 36 Jinkee Road, 1st floor. Early this coming year these offices will be located permanently at No. 8 Yuen Ming Yuen Road where much more spacious quarters will be available than those occupied in the past.

English and American Medicine

As an Englishman travelling in America there are a number of lessons to be learned. Briefly, they are as follows: England is a far better place than her native pessimism allows. English medicine suffers from self-complacency and self-sufficiency to some extent, also from lack of energy and enthusiasm. English medicine gains greatly in being
possessed of great clinical power and of balanced judgment. American medicine has an exalted idea of research and subordinates everything to that. American medicine gains in the wealth of available mechanical and laboratory appliances, in great energy and enthusiasm, and in the skill of hospital planning and organization.

Both countries seem at the moment to have forgotten the true aims of medical teaching. These would seem to be three in number: (i) The training of research workers, (ii) the training of specialist practitioners, (iii) the training of general practitioners. The route to the second and the third of these does not lie logically through the first. The first is of the highest ultimate importance, just as life looks always to the future, but as there is no escaping the present the third is of the greatest practical importance at the moment.

The number of research workers who have added to knowledge is probably no greater than is that of the painters, writers and musicians who have added to art. Neither class can result from mass production in endowed institutions, though of course to both education and technique is a necessity.

The artists are not as a class discredited if they fail to produce regularly a monthly or yearly masterpiece, but research workers tend at the present time to regard paper production as a necessary means of self-justification.

_St. Barts Hoep. Jour. April, 1927._

**Plasmochin (Plasmoquine)**

The China-Export-Import and Bank Co., 10 Kiangei Road, Shanghai, have kindly notified us that they will shortly be receiving stocks of this new drug for the treatment of Malaria. (See China Medical Journal, 1927, p. 488.)

Further detailed information may be had direct from the firm, but they permit us to quote the price as follows:

- Packets of 25 tablets of 0.3 grains at $1.25 Mex.
- Packets of 60 tablets of 0.075 grains Plasmochin and 1 grain Quinine Sulph. at $2.25 Mex.

Physicians referring in their order to this Journal will be allowed a discount of 10% on the above.

**Simplicity in Photography**

We have received from Messrs Burroughs, Wellcome and Co., Hongkong Road, Shanghai, a delightful little booklet entitled "Scientific Simplicity in Photography". The illustrations are exquisitely done and make us very envious for similar results in the C.M.J.

The directions in this booklet for exposure, development and colour toning of prints are exceptionally lucid. There is generally little excuse in the present day for three quarter of the prints of amateur photographers work that are foisted on innocent friends and relations—wrongly exposed, poorly developed, and badly printed. With a book like this in one's hands there is certainly no excuse at all.

Messrs Burroughs Wellcome offer to supply a copy free to any of our readers, and we would especially commend this to some of the contributors of our illustrations.
NEW MEMBER PROPOSED

Riego, R. C.  D. D. S., Manila, M. D. Chicago  M. E. S.  Foochow, Fu.
Proposers:  V. P. Patterson
            D. Farquharsen

NEW MEMBER ELECTED

Dr. Margaret B. Foster  U. C. C.  Changte, Honan.