NON-SPECIFIC PROTEIN THERAPY IN EYE INFLAMMATIONS, WITH SPECIAL REFERENCE TO THE USE OF TYPHOID VACCINE.*

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For many years it has been known among medical men that localized inflammations may sometimes be cured, or at least be relieved, by the onset and course of a severe intercurrent infection. In the realm of inflammations localized in the eye numerous such cases have been reported. For instance, an intense interstitial keratitis disappeared following an attack of measles. Hühn1 observed during the course of a scarlet fever epidemic in a trachoma hospital for children that the trachomatous symptoms improved remarkably. Recently Angelucci2 reported from a district in Italy where trachoma is quite rampant, that trachoma rarely coexists with pulmonary tuberculosis, but whenever it does, it is very mild. The most striking observations of this character have probably been made in cases suffering from a gonorrheal infection prior to the onset of an intercurrent disease. According to Peterson1, one rarely, if ever, sees a gonorrheal infection coexisting with a fever-producing disease, such as pneumonia, typhoid, or malaria, but that it is relatively common in cases suffering from chronic, non-febrile affections. It has even been stated that fever patients can not be infected by the gonococcus.

The beneficial effect of fever upon gonorrheal cases may be due to a number of factors, but it has one explanation, at least, which is simple and reasonable: The gonococcus is heat sensitive both in vitro and in vivo. The optimum temperature at which it grows in cultures is between 36.5° and 37°C. A slight increase above this inhibits the

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growth of the organism; a sudden rise to 39°C, or higher, means certain death of the culture. The beneficial action on localized inflammations, of fevers produced by other bacteria than the gonococcus cannot be so readily explained, since many of them are not killed by even the highest temperature to which a human body may be subject. Furthermore, the relatively greater heat sensitivity of the gonococcus is revealed by the fact that gonorrheal infections disappear, following attacks of fever, more quickly than other infections.

Based upon their knowledge of the effect of intercurrent infections upon localized inflammations, several clinicians and investigators, about ten or twelve years ago, began to produce a fever artificially in their treatment of gonorrheal complications. They tried one method after another to produce fever, and finally hit upon intramuscular injections of boiled milk, which they discovered cleared up these infections in a "miraculous manner". Müller and Thanner were the first to use milk injections in gonorrheal ophthalmia, as well as in certain other types of acute eye infections. In this connection it may be added that, in the eye clinics of continental Europe, the value of milk injections in the treatment of gonorrheal ophthalmia is considered one of the great medical discoveries of the twentieth century.

Until recently, the outlook for patients suffering from the disease known as general paralysis of the insane, was practically hopeless. But, according to Yorke, it has long been known that the symptoms often exhibited remarkable remissions if these patients happened to develop an acute intercurrent disease. In 1912, Wagner von Jauregg of Vienna, as a result of many years' observation of general paralysis, concluded that it was the rise of temperature which accompanied the intercurrent disease, that was in some way responsible for the improvement produced in the nervous condition. This theory was strengthened by the results of his experimental work on rabbits infected with syphilis. He found that the spirochetes disappeared after the temperature had risen several times to 42°C or 43°C. (The normal temperature of rabbits is normally about 2°C higher than that of humans). It was on the basis of this hypothesis that von Jauregg had begun, several years before, to use tuberculin injections in the treatment of this disease. Later he tried staphylococcic vaccine.

His results on the whole were so encouraging that he decided to test his hypothesis further. He cast around for an infection which could safely be administered to his patients, and which could, after it had run the course he desired, be readily controlled by the use of drugs. Two diseases seemed to fulfill the necessary conditions, namely, malaria and relapsing fever. After due trial he found malaria the more satisfactory. During the years 1918-19, he published the results of a long
series of general paralytics infected with malarial plasmodia. Those results were so promising that physicians the world-over immediately became interested, not only because it appeared that there had been found a treatment for a disease which hitherto had offered no hope of being either arrested or improved, but perhaps even more because of the implications that evolved from that investigator's work.

During the past decade numerous substances from the animal, vegetable, and mineral kingdoms, have been employed by clinicians and research workers to produce a fever reaction, as a form of treatment in various localized and general inflammations. The following are a few of those substances listed by Peterson: Counter-irritants, such as the actual cautery, moxas, and blisters; blood and serums, both normal and immune, from man, animals, fowls, etc; diphtheria and tetanus antitoxins; proteins in the form of milk, egg albumin, and casein; plant proteins and protein split products; enzymes and tissue extracts; vaccines of all kinds; bacterial extracts and related products; colloidal metals, such as gold, silver, manganese, and mercury; yeasts; irradiations by radium, roentgen rays, and actual sunlight; and numerous miscellaneous substances, such as hypertonic salt solutions, sugar solutions, distilled water, formalin, and turpentine. One's first impression upon perusing these lists is that the investigators in question had gone wild in their enthusiasm for experimentation.

But as a result of all this experimentation much valuable information has been gained. For instance, it is now the consensus of opinion that protein substances are the most effective of all those available for the purpose of non-specific therapy. In fact, there now exists but little doubt that a positive systemic reaction following a protein injection, may produce excellent therapeutic results in certain localized inflammations. The accumulating evidence of clinical results and animal experimentation regarding the beneficial effect of protein injections is already overwhelming, although it must be admitted that the whole subject is still only meagrely understood. But as Key states, the debate no longer rages concerning the question whether non-specific protein therapy has a reasonable basis for it or not, but rather over what form of protein should be used.

We have used milk injections in some of our acute eye infections at the Peking Union Medical College for several years. In gonorrheal ophthalmia we have found that this form of treatment fulfills all the claims of its exponents. In fact, it acts like a specific remedy, and in a remarkably short space of time. Since using milk we have not lost a single eye in a gonorrheal case, from perforation of a corneal ulcer, provided the cornea had not already perforated at the time of the patient's admission to the ward. In almost every instance, where milk
was given, the gonococci disappeared within twenty-four hours from smears and scrapings taken from the conjunctival sacs. Rarely have we had to give more than two or three doses in these cases. Prior to the use of milk we sometimes found gonococci in stained conjunctival specimens as long as four to six weeks, and in one case, ten weeks, after admission to the hospital for treatment.

In acute iritis and uveitis, and in ulcers of the cornea, we have found that milk, injected into the gluteal muscles, almost always had a good therapeutic effect, but we have only rarely observed good results from its use in chronic inflammations. To adults of good vitality, we give at the first injection, 10 cc. of cow’s milk which has been boiled for five minutes. For the second and subsequent doses we give 15 cc., unless the temperature following the first dose rises unduly high.

There are two serious objections to the use of milk injections: The first is, the severity of the localized pain and tenderness that follow the injection in the gluteal region. In some of our cases the pain persisted for two or three days, and the tenderness for a week or two. A few of our patients flatly refused a second dose on account of the discomfort caused by the first. Several cases have been reported in which abscesses developed at the site of the injection. It was our good fortune not to have this complication occur in any of our cases.

Another objection to milk is the danger from anaphylactic shock. A number of such cases, a few of them followed by death, have been reported. As a safeguard against this danger it is our custom to inject a drop or two of milk intradermally, and then to wait half an hour or so before giving the dose, in order to determine whether the individual be hypersensitive to that form of protein or not. None of our cases showed any evidence of sensitization to this precautionary intradermal test; nor did any case develop signs of anaphylaxis. But, on the whole, intramuscular injections of milk can not be considered an ideal method of treatment.

A number of ophthalmologists have recently been using diphtheria antitoxin rather than milk injections. Key and Verhoeff have each reported good results with this form of non-specific protein therapy. The chief objections to the use of diphtheria antitoxin are the danger of anaphylaxis from the horse serum, and the possibility that the individual might at some later date require therapeutic doses of diphtheria or tetanus antitoxin. I understand that a new diphtheria antitoxin is now available, which is said to be practically free from substances which might produce an anaphylaxis. If this be true then the chief objection to the use of this form of antitoxin in non-specific protein is removed.
Protein Therapy in Eye Inflammations.  

About two years ago we had a private patient, a Chinese woman, 30 years old, who developed an acute type of exudative chorio-retinitis, associated with areas of retinal detachment in both eyes. Her vision rapidly diminished to the counting of fingers, and then slowly improved, under constant and vigorous treatment, over a period of several months. She finally seemed to be out of danger, when she suddenly developed an acute uveitis of both eyes. Whereas, in the first instance, the inflammation had been confined wholly to the posterior ocular segment, it became, in the second instance, an anterior segmental disease—both attacks probably being due to the same cause. All of our efforts to locate the focus of the inflammation proved futile. In spite of the most strenuous treatment she steadily grew worse. Her condition became still more complicated by the development of secondary glaucoma in both eyes. We were baffled, and the outlook for saving her vision seemed grave.

Milk injections were tried, but they made her worse. We had no better results with diphtheria antitoxin. As a last resort we decided to try typhoid vaccine. We began with an intravenous injection of 25 million bacteria. In less than twelve hours we noticed an improvement. In forty-eight hours there was marked improvement—the yellowish-white deposits on the posterior surface of the cornea were much smaller and were becoming brownish; the exudate in the anterior chamber had half disappeared and the tension was considerably reduced. We gave her dose after dose in increasing amounts, with steady improvement. Following the tenth intravenous dose (1 cc., i.e., 2500 million bacilli), we concluded that the inflammation was under control, and shortly after that we discharged her. The vision of the right eye was restored to 6/9, but the left eye had been much more seriously inflamed and had suffered more from the secondary glaucoma, so the restoration of vision in that eye was much less.

Unfortunately, several weeks later she had a recurrence of the uveitis, associated with a more severe secondary glaucoma than she had before. The tension steadily increased, so a button-hole iridectomy was performed on each eye, in spite of the presence of an exudative iritis. Again we found that typhoid vaccine given intravenously was the only remedy that could arrest and reduce the inflammation. During the year this patient has had several recurrences, but each one has been controlled and combatted successfully by typhoid vaccine. However, the vision of the left eye has steadily diminished with each attack, while that of the right eye fortunately has remained the same (6/9).

The patient has received a total of fifty-seven intravenous injections of typhoid vaccine in about eleven months. There is no evidence that
she has suffered any functional or organic disability from this long series of vaccine treatment. It seems quite certain that she would have gone blind months ago, if we had not resorted to this strenuous method of treatment. The prognosis for the right eye is good, but rather bad for the left, as far as the restoration of useful vision is concerned. She will probably have more recurrences, but if she will come to us as soon as each recurrence begins and permit us to give her typhoid vaccine, we believe that we can keep on saving the right eye. Whatever the exact character of the disease is, the typhoid vaccine has not been able fully to cure it, but it has never failed to arrest the inflammation and cause it to disappear for weeks at a time. Fortunately, these periods of remission are becoming longer while the recurrences are becoming less severe, so our hope is that the focus (or foci) of the infection, wherever and whatever it is, will finally disappear.

Encouraged by the results of this form of non-protein therapy in such a desperate case, and anxious to learn its effect and limitations in other ocular inflammations, we decided to try the vaccine in a wide variety of cases. The results of this work, which are tabulated in Chart I, refer only to the action of the vaccine treatment, for with only a few exceptions, the typhoid vaccine was first given without any other treatment. Many of the cases received other treatment later, but the results of the combined treatment, are not included in the table, in order to avoid confusion.

Dosage and Method of Administration.

We have used mostly a proprietary stock vaccine, 1 cc. of which contains the following:

Typhoid bacilli ......................... 1,000 millions
Paratyphoid bacilli (A) ............... 750 ,,  
Paratyphoid bacilli (B) ............... 750 ,,  
\[
\text{total} = 2,500 ,\
\]

For the average adult (weight about 150 lbs.) with good vitality, we inject intravenously 25 million bacteria at the first dose. We generally double this amount for the second dose, and then double or nearly double the amount of the previous dose for all successive doses. At the ninth or the tenth dose, by this routine method, a whole cc. of vaccine is given. The vaccine is diluted to obtain in this manner the dose required:

To 1 cc. of the vaccine, add 9 cc. of normal saline solution (Dilution I) To 1 cc. of this dilution, add 9 cc. of normal saline solution (Dilution II) Then 1 cc. of Dilution II contains 25 million bacteria, the usual amount of the first dose. We generally add
### Chart 1

<table>
<thead>
<tr>
<th>No.</th>
<th>Hosp. No.</th>
<th>Diagnosis</th>
<th>Number of Injections</th>
<th>Result of vaccine treatment itself</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>10508</td>
<td>Acute uveitis</td>
<td>37</td>
<td>R. E. Very much improved L. E. Improved</td>
</tr>
<tr>
<td>2</td>
<td>13601</td>
<td>Deep keratitis and uveitis</td>
<td>6</td>
<td>Very much improved</td>
</tr>
<tr>
<td>3</td>
<td>14484</td>
<td>Interstitial keratitis (Congenital syphilis)</td>
<td>11</td>
<td>Slightly improved</td>
</tr>
<tr>
<td>4</td>
<td>13533</td>
<td>Interstitial keratitis (Congenital syphilis)</td>
<td>11</td>
<td>Slightly improved</td>
</tr>
<tr>
<td>5</td>
<td>15384</td>
<td>Interstitial keratitis and uveitis (T. B. and congenital syphilis)</td>
<td>7</td>
<td>Doubtful</td>
</tr>
<tr>
<td>6</td>
<td>15040</td>
<td>Interstitial keratitis (Acquired syphilis)</td>
<td>4</td>
<td>Slightly improved</td>
</tr>
<tr>
<td>7</td>
<td>14589</td>
<td>Interstitial keratitis (Acquired syphilis)</td>
<td>4</td>
<td>Improved</td>
</tr>
<tr>
<td>8</td>
<td>15542</td>
<td>Interstitial keratitis</td>
<td>2</td>
<td>Slightly improved</td>
</tr>
<tr>
<td>9</td>
<td>8183</td>
<td>Acute iritis with secondary glaucoma</td>
<td>5</td>
<td>Improved</td>
</tr>
<tr>
<td>10</td>
<td>14092</td>
<td>Acute iritis</td>
<td>5</td>
<td>Very much improved</td>
</tr>
<tr>
<td>11</td>
<td>15575</td>
<td>Acute iritis</td>
<td>2</td>
<td>Much improved</td>
</tr>
<tr>
<td>12</td>
<td>14307</td>
<td>Syphilmoma of iris with iritis</td>
<td>4</td>
<td>Very much improved</td>
</tr>
<tr>
<td>13</td>
<td>12319</td>
<td>Phlyctenular keratitis</td>
<td>3</td>
<td>Much improved</td>
</tr>
<tr>
<td>14</td>
<td>15112</td>
<td>Phlyctenular keratitis</td>
<td>1</td>
<td>Doubtful</td>
</tr>
<tr>
<td>15</td>
<td>13633</td>
<td>Sclerosing keratitis</td>
<td>2</td>
<td>Slightly improved</td>
</tr>
<tr>
<td>16</td>
<td>13599</td>
<td>Ulcer of cornea</td>
<td>6</td>
<td>Improved</td>
</tr>
<tr>
<td>17</td>
<td>14585</td>
<td>Ulcer of cornea (Trachomatous)</td>
<td>1</td>
<td>Improved</td>
</tr>
<tr>
<td>18</td>
<td>14961</td>
<td>Ulcer of cornea (Trachomatous)</td>
<td>3</td>
<td>Improved</td>
</tr>
<tr>
<td>19</td>
<td>15172</td>
<td>Ulcer of cornea (Trachomatous)</td>
<td>1</td>
<td>Improved</td>
</tr>
<tr>
<td>20</td>
<td>15471</td>
<td>Ulcer of cornea (Trachomatous)</td>
<td>1</td>
<td>Slightly improved</td>
</tr>
<tr>
<td>21</td>
<td>15221</td>
<td>Trachoma with pannus and plasmoma</td>
<td>3</td>
<td>Improved</td>
</tr>
<tr>
<td>22</td>
<td>15173</td>
<td>Gonorrhreal ophthalmia</td>
<td>4</td>
<td>Improved</td>
</tr>
<tr>
<td>23</td>
<td>15562</td>
<td>Gonorrhreal ophthalmia</td>
<td>2</td>
<td>Much improved</td>
</tr>
<tr>
<td>24</td>
<td>15091</td>
<td>Penetrating wound of eyeball (Severe)</td>
<td>2</td>
<td>Improved (No panophthalmitis)</td>
</tr>
<tr>
<td>25</td>
<td>14726</td>
<td>Traumatic cataract (Dissection of congenital cataract)</td>
<td>2</td>
<td>Much improved (Very rapid absorption of lens matter)</td>
</tr>
<tr>
<td>26</td>
<td>15197</td>
<td>Episcleritis and choroiditis</td>
<td>3</td>
<td>Much improved</td>
</tr>
<tr>
<td>27</td>
<td>13637</td>
<td>Chorio-retinitis with vitreous opacities</td>
<td>8</td>
<td>Very slightly improved</td>
</tr>
<tr>
<td>28</td>
<td>15220</td>
<td>Exudative choroiditis</td>
<td>4</td>
<td>Very much improved</td>
</tr>
<tr>
<td>29</td>
<td>15441</td>
<td>Exudative chorio-retinitis with detached retina</td>
<td>3</td>
<td>Improved</td>
</tr>
<tr>
<td>30</td>
<td>15149</td>
<td>Primary optic atrophy (Tabetic)</td>
<td>3</td>
<td>Slightly improved (temporary)</td>
</tr>
<tr>
<td>31</td>
<td>15191</td>
<td>Retrobulbar neuritis</td>
<td>4</td>
<td>Improved</td>
</tr>
<tr>
<td>32</td>
<td>13204</td>
<td>Retrobulbar neuritis</td>
<td>10</td>
<td>Much improved</td>
</tr>
</tbody>
</table>
to the dose sufficient saline solution to fill a 5 or 10 cc. syringe.
By keeping Dilutions I and II in sealed bottles on ice it is possible

to use them for subsequent doses. But great precautions are
ecessary in order to prevent contamination.

Dosage and Systemic Reactions.

Cases must be treated as individuals and not by arbitrary stan-
dards, since their systemic reactions vary somewhat. The first
dose indicates fairly well what the subsequent reactions in that
particular patient will be. There is, of course, no local reaction at
the site of the injection, as occurs with milk, which is given intra-

muscularly.

Thirty to sixty minutes following the intravenous injection, the
patient begins to have a chill which lasts for half an hour or more.
During the chill there develops a leucopenia, which is generally
proportionate to the severity of the chill, but throughout the period
of the rigor, the temperature either remains stationary or goes up a
little towards the end. The chill is characterized objectively by a
weak pulse and signs of poor peripheral circulation, but no case of
ours developed signs of collapse. A severe chill always heralds a
quickly developing high fever. The temperature generally rises in
two or three hours to 39°C or over. In the great majority of cases
this rise is followed by a rapid fall in the temperature, during which
the patient may have another slight chill. This fall (sometimes
nearly to normal) is quickly followed by a secondary rise, in which
the temperature, usually reaches a higher point than it did on the first
rise, perhaps up to 40°C, rarely above. From this point the tempera-
ture slowly falls by lysis during a period of about thirty-six hours.
Occasionally the temperature does not reach normal again for forty-
eight hours, or even longer.

The changes in the blood after the chill follow quite regularly the
temperature changes, although sometimes in a slightly delayed manner.
That is, the leucopenia disappears as soon as the fever begins, and
generally the highest leucocyte count is synchronous with the highest
temperature attained. A leucocytosis of 20,000 to 25,000 is not
uncommon. During the initial leucopenia the polymorphonuclears
diminish slightly, while the lymphocytes proportionately increase in
number. But during the leucocytosis the reverse phenomenon always
occurs, i.e., the polymorphonuclears rapidly and markedly increase, while the
mononuclears proportionately diminish. The highest polymuclear count
(usually 85 to 90 per cent, sometimes more) coincides with the highest
leucocyte count, and drops back to normal simultaneously with the
fall in the temperature and leucocytosis.
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The subjective symptoms during the fever are malaise, headache, and loss of appetite. Only one case of ours had nausea, none vomited; nor did any develop complications of more than passing nature. In two cases the pulse became very weak and rose to a rate of 140, but an intravenous injection of 1 cc. of digipuratum restored the heart action almost immediately. In these cases we found that two doses of tincture of digitalis, given prior to their subsequent injections of typhoid vaccine, maintained the pulse in good condition throughout the high fever period. There was no evidence of organic heart disease in these two cases, so we felt justified in continuing the vaccine treatment, since the first dose had been followed in each by marked improvement in the eye condition.

The focal reaction is certainly a positive one, but not in the sense in which that word is generally used, i.e., the first dose (as well as subsequent doses) was never characterized by an increase in the ocular inflammation, but rather by a distinct improvement in most of our cases. In other words, the defense mechanism was activated, rather than the invading organisms or toxins stimulated. The patients, of course, noticed their own improvement, and sometimes asked for another dose. The discomfort caused by the artificially produced fever was slight compared to the pain associated with a deep ulcer of the cornea, for instance. In the absence of other treatment, able to produce as good results, we felt justified in continuing the vaccine treatment when the first dose proved effective, although it undoubtedly was empirical to do so.

The size and the number of the doses are dependent upon the systemic reactions, the character of the subjective symptoms, and the nature and degree of the focal reaction; in brief, the rate of improvement, if any. Since most of our cases were selected, in the sense, first, that they were serious, and second, that the old methods of treatment for such affections have never been very satisfactory, we were loath to discontinue the vaccine treatment until convinced that it would not help. If a case showed no improvement after three doses, there seemed to us no further indication to continue. In only two cases did we have doubtful results following the use of vaccine. But those cases subsequently also showed no improvement under other methods of treatment.

It is our custom to wait for twenty-four hours or so, after the temperature returns to normal following the first dose, before giving the second dose. On account of the long-continued fever following the first dose, the second dose is usually not given until the third day, sometimes the fourth. But the temperature reaction following the
second dose is rarely longer than eighteen or twenty hours, and follow­ing subsequent doses, usually about ten to fifteen hours, so the third, fourth, fifth doses, etc., are usually given every second day. With the exception of the interval between the first and second doses, such a patient's temperature chart looks typically like the record of a tertian malarial infection.

Discussion.

In our experience no benefit resulted from an injection of vaccine that was not followed by fever. Furthermore, the degree of improve­ment seemed to be directly proportionate to the fever reaction. On this point our experience does not differ from the consensus of opinion regarding the effect of non-specific protein therapy in general.

Typhoid vaccine treatment evidently does not confer an immunity upon a healed or nearly healed eye, for in our first case, for example, several relapses occurred after previous attacks had been aborted. Whatever the benefit that is derived from such treatment, it is evidently associated with, and perhaps dependent upon, the protein shock. But to explain protein shock in an adequate manner is not yet possible; our present understanding of the subject is still too meagre. Some say that the good effect of such a shock results from the increase of antibodies in the blood. Peterson states that such an increase may often be demonstrated, but that it is not a constant result following an injection. Therefore, it cannot be identified as the sole cause of the abortive recovery of the patient. He suggests that the sudden flooding of the lymph spaces by the antibodies, after the permeability of the capillaries has been increased following a protein shock, may be the vital factor in overcoming the infection. Bearing on this point, Frazer and Duncan state that injections of endotoxins always produce toxic symptoms with little or no increase of antibodies, and with comparatively little therapeutic effect. They suggest, therefore, the use of various vaccines which have been more or less detoxicated by having been stored for several months. But in typhoid vaccine the necessity for detoxicating is practically nil, since in the first place, the organism is a large one, and in the second place, according to Thomson, the primary poisonous molecule of Vaughan is small in proportion to the secondary and tertiary sensitizing groups. Regarding the good effect of typhoid vaccine, it seems to be generally agreed that it does not act directly on the causative agent of the inflammation, but indirectly in stimulating a quick and powerful defense mechanism on the part of the body forces. It cannot be referred to as having a curative action, after the manner of a specific remedy, any more than instillations of an atropine solution in iritis may be considered as directly curative,
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but it almost always initiates improvement, sometimes markedly, and potentiates the action of the usual local and general treatment. With one exception we found that typhoid vaccine was surprisingly efficacious in syphilitic affections of the cornea and uveal tract. It not only initiated an improvement before specific treatment was given, but also effected an unusually rapid disappearance of the lesions when given in conjunction with specific treatment.

In a recent communication, Allen\(^{14}\) states that he found intravenous injections of typhoid vaccine preferable to intramuscular injections of milk in the treatment of some ocular inflammations. Boyd\(^{15}\) reports good results with the vaccine in case of iritis. Engman and McGarry\(^{16}\) began to use typhoid vaccine about ten years ago in the treatment of a variety of skin diseases, including a few syphilids, lupus, and psoriasis. In China, Cadbury\(^{17}\) was the first to use the vaccine in non-specific therapy. He reports the various forms of arthritis were either cured or relieved, and some syphilitic affections were somewhat improved; in neuralgia it was effectual in relieving the pain. He also tried it in several forms of skin lesions, some with excellent results, others with results not so good.

**Indications:**

In the hospital of the Peking Union Medical College, we have found intravenous injections of typhoid-paratyphoid vaccine efficacious in the following eye affections:

1. Acute or subacute infections of the conjunctiva where the disease is unusually severe or prolonged. (In gonorrheal ophthalmia we still have a feeling that milk injections act more promptly and specifically, and in our serious cases we shall continue to use it whenever the patient will permit us.)

2. In ulcers of the cornea and in all forms of keratitis.

3. In uveitis, iridocyclitis, and iritis, no matter what the cause, with the possible exception of tuberculosis, in which we are still in doubt regarding its efficacy.

4. In optic neuritis, especially the retrobulbar type and those due to focal infections.

5. In edema of the retina; in retinal hemorrhages; and in exudative chorioretinitis.

6. In hemorrhages and exudates from the retina or choroid into the vitreous; in acutely developing vitreous opacities, particularly those of the massive dust-like type.

7. In the absorption of soft lens matter following traumatic cataract or discission of a congenital cataract.
8. Following penetrating wounds of the eyeball in order to prevent endophthalmitis or panophthalmitis (an exceedingly important use).

**Contraindications:**

1. In severe illness with high fever.
2. In cases with low vitality.
3. In any condition in which the added strain occasioned by a protein shock might not be well borne by the heart.

**Summary.**

1. Typhoid-paratyphoid vaccine, given intravenously, is probably the best protein available for non-specific therapy in many ocular affections.
2. Its use is indicated in all acute and subacute inflammations of the eye, with the possible exception of those caused by the tubercle bacillus.
3. In penetrating wounds of the eye it should be used as early as possible as a prophylactic measure against intraocular infection.
4. In syphilitic lesions of the eye it is recommended as a potentiator of the specific treatment.
5. In gonorrheal ophthalmia, intramuscular injections of milk are probably more potent than intravenous injections of typhoid vaccine.
6. The use of typhoid vaccine is contraindicated in cases with high fever, low vitality and organic heart affections.
7. When given without supporting treatment, it generally initiates such an improvement in the patient's condition, that less severe measures may usually be employed alone, during the late stage of the recession of the disease, in order to effect a final cure.
8. When given simultaneously with the usual local and general treatment, it nearly always potentiates the action of that treatment, thereby shortening the course of the disease, and reducing the danger of permanent damage resulting from a more prolonged inflammation.
9. It should not be substituted for other effective means of treatment, but should be considered as a valuable addition to our therapeutic armamentarium.
10. Intravenous injections of the vaccine are followed, first, by a chill and leucopenia, and then, by high fever and leucocytosis, in which the polynuclears are proportionately much increased.
11. The therapeutic effect seems to be proportional to the height of the fever; furthermore, none results from injections not followed by fever.
12. On the basis of the results obtained in inflammations localized in the eye, it seems reasonable to suppose that typhoid-paratyphoid vaccine might prove equally efficacious in acute and subacute inflammations (non-febrile or nearly so) localized in other parts of the body.

REFERENCES.


The China Medical Journal.

ORGANOTHERAPY
A review of the American official position for 1920.

B. E. Read, Ph. D., Ph. 0.
Department of Pharmacology, Peking Union Medical College,
Peking, China.

The recent flooding of the China market with various gland preparations presenting enormous claims for their use in a multitude of ways calls for a serious consideration of the true worth of animal products and the significance of these multifarious advertisements in China. A review of the official American position leaves no room for doubt that any one professing to uphold scientific medicine will speedily oppose the unethical claims of the numerous aphrodisiac, uterine, and other spurious animal preparations foisted upon this country, a condition of affairs associated with fraud, undesirable secrecy, and unethical advertising.

To control such a state of affairs in the United States of America, the American Medical Association has a properly constituted Council on Pharmacy and Chemistry, who with the sole object of protecting the medical profession and the public, examine the claims of all proprietary medicines and issue regularly reports upon their worth and their admissibility into New and Non Official Remedies, an annual publication containing descriptions of non-official articles accepted by the Council as conforming to recognised scientific standards and rules fully stated in their annual publications.

Of the many animal remedies upon the market but few have found their way into official favour. These few have been tested and have proven at least to be of some worth. Of the many others it is sufficient to state that much of the advertising about them is misleading if not actually false. The evidence upon which their efficacy is based is so confused by polypharmacy, subjective symptoms, and uncontrolled experimentation, that they should under no circumstances be given any consideration unless approved by some such reliable body of impartial and unprejudiced men as the A.M.A. Council.

Hence this review will be concerned with a very limited number of substances. Certain preparations of the ductless glands are already official in the U. S. P. and B. P. such as adrenalin and thyroid preparations which are readily standardised by chemical means and the posterior lobe of the pituitary which is subject to physiological standardisation. Insulin, whilst it is not yet official, has won a recognised place in therapeutics. Other organ products state the Council are scarcely beyond the experimental stage. However the following have been admitted and merit discussion here. (1) Ovary (including the Corpora Lutea) (2) Parathyroid gland.
"Various preparations of the ovary of animals have been used in the treatment of conditions believed to be due to ovarian dysfunction, on the assumption that the preparations contain the active principles or hormones of the ovary. Preparations of the whole ovary, corpus luteum, liquor folliculi and ovarian residue have been employed.

Rational as ovarian therapy may theoretically appear to be in some conditions, the actual results are rarely striking and often nil to the careful observer. It cannot be assumed that a commercial preparation can replace the normal ovarian secretion in the patient's body, or for that matter that it originally contains any of the active hormones of the ovary. Further, it is not unlikely that whatever activity may be present in ovarian preparations given by mouth, is destroyed by the digestive juices, and there is considerable evidence that the aqueous extracts prepared for hypodermic use are inert. It may also be noted that favorable results interpreted as due to ovarian therapy have most often been reported in conditions in which the symptoms are subjective. Frequently favorable reports have concerned cases in which ovarian products were given together with preparations of the thyroid gland, the activity of which is not destroyed in the digestive tract."

There have been admitted into the N. N. R. a variety of preparations with the same recognised use and action under the titles, (a) Ovarian Substance, representing the entire fresh ovaries, including the corpora lutea; (b) Ovarian residue, representing the residue from the fresh ovaries after removal of the corpora lutea; (c) Corpus Luteum, representing the fresh substance of the corpora lutea dried and powdered; &c. Average Dose, about 0.2 gram (3 grains).

The use of these substances has been supported by the work of:


Parathyroid Gland.

"Recent investigations have shown that preparations which have a most powerful influence upon calcium metabolism may be made from the parathyroids of the ox. This substance is injected intramuscularly or subcutaneously. The calcium concentration of the serum of animals deprived of their parathyroid glands can be raised and maintained at a normal limit. By repeated doses it may be raised far beyond this, either in parathyroidectomized or normal animals; unless the dosage is carefully regulated, death may ensue. The preparations can be standardized according to their activity in raising the lowered calcium concentration. Treatment by these parathyroid preparations is rational and has been shown to be of value in tetania parathyroideprivia and in infantile tetany. A
continuance of their use in the former condition is doubtless necessary. In infantile tetany their employment would appear to be a temporary expedient until other measures have an opportunity to combat the fundamental underlying condition. In gastric tetany the calcium of the serum is normal. It is believed that its activity is interfered with. It has not yet been demonstrated sufficiently that this can be affected beneficially by parathyroid therapy.

The available clinical or scientific evidence does not permit an estimate of the ultimate usefulness of the parathyroid preparations. The near future should furnish evidence regarding their use in many different conditions. The danger of hypercalcemia which is easily induced by overdosage with an active preparation makes it imperative that clinical studies should be carefully controlled by accurate determinations of the serum calcium."

Various brands of desiccated parathyroid gland are listed representing the dried and powdered exterior parathyroids of cattle, with and without standard tests. Dose 0.006 Gm. (1/10 grain). One preparation requires an ash limit of not more than 7 per cent, and organic iodine present approximately 0.0048 per cent. Parathormone is a special standardized aqueous extract used in tetany in doses of 20 to 30 units. One unit is defined as one hundredth of the amount of solution required to cause an increase of 0.005 gm. of Calcium in the blood stream of a twenty Kilogram normal dog, determined 15 hours after the injection of the drug. The introduction of these preparations is dependent upon the work of:

(3) Orilo, G. W., Endocrinology, 1925, 9, 391.
(5) Broderick, F. W., Lancet, 1921, vi, 1216.
(6) Vincent, S., Lancet, 1923, i, 130.
(7) Davies, British Med. J. 1923, i, 512.

PITUITARY.

Whilst pituitary is now official in our pharmacopoeias, owing to the lack of a chemical standard there is great variation in the products upon the markets. Seeing that oral administration gives feeble or doubtful results and it is recommended that extracts should always be injected hypodermically or intramuscularly, we do not see the force of quoting desiccated pituitary substance.

"Solutions prepared from the posterior lobe injected subcutaneously are employed against uterine atony and in postpartum as well as in other forms of uterine hemorrhage. Pituitary preparations should not be injected during the first stage of labor because, if the cervix be not fully dilated, the energetic contractions may cause rupture of the uterus. It has also been recommended in shock and in various other conditions of temporary low blood pressure, but it would be ineffective in advanced shock and at best of only temporary benefit in incomplete shock. It is useful in intestinal paresis whether following abdominal operations or complicating pneumonia. It has also been used to control diabetes insipidus with temporary benefit."
"Anterior Lobe.—Preparations of the anterior lobe have been given in the later stages of acromegaly, with reported benefit in some instances, but there is doubt as to its value in this condition. It is contraindicated in the early stages of acromegaly. The anterior lobe has been used in the condition known as dystrophia adiposogenitalis, but some careful observers have failed to note any effect after many trials."

The Solution of Pituitary in the U. S. P. is standardized so that 1 cc. has from 80 to 120 per cent of the activity of 0.005 gm of the standard-pituitary powder determined by its oxytocic effect.

Dosage. For use in obstetrical cases, from 0.3 to 1.0 cc., in surgical cases from 1 to 2 cc. preferably by injection.

There have arisen two kinds of Pituitary Extract upon the market. The Obstetrical which is generally of pharmacopoeial strength. It were better if the special name were omitted. The Surgical, which is usually made double strength, is for use in shock. There is no satisfactory argument for having both these solutions. Overornamented things in nature do not survive, why should both of these? The use of Pituitary is so well established that no further reference is necessary.

Insulin.

The N. N. R. states that, "In diabetes, reliance on the oral administration of the pancreatic preparations thus far prepared has so little justification that such practice merits the most vigorous condemnation."

"The administration of insulin is indicated in cases of diabetes mellitus which cannot be controlled at a satisfactory level by dietetic treatment. In such cases, with proper regulation of the diet, insulin should be administered in such amounts as to prevent glycosuria and a too great hyperglycemia. In some cases the dosage of insulin may be gradually decreased as the body power of utilizing carbohydrate returns toward normal.

Overdosage of insulin is followed by the development of serious symptoms which demand immediate treatment. These symptoms are relieved by the administration of some form of available carbohydrate by mouth or stomach tube, or, if the patient is comatose, by the intravenous injection of from 5 to 20 grams of pure glucose in a 5 to 50 per cent sterile solution.

Dosage.—Insulin is administered by injection into the loose subcutaneous tissue of the body, usually 0-30 minutes before meals. There is no average dose of insulin for diabetics; each case must be studied individually. Except when complications occur insulin is not indicated when a patient has adequate glucose tolerance to provide him with a diet sufficient for light work. The dose depends upon the amount of glucose in such a diet as he is unable to metabolize; i.e. the glucose excretion on a known diet. A convenient formula is:

\[
\text{Average gms. glucose excreted} \div 1.5 = \text{sufficient units of insulin to render most patients aglycosuric.}
\]

In cases of coma or severe acidosis an initial dose of 30-60 units may be given (in coma intravenously) followed at 3-4 hours intervals by doses of 20 units or more subcutaneously. Administer one gram of glucose for each unit of insulin used. The patient should never become hypoglycemic.
Insulin occurs upon the market in vials usually containing 5 or 10 ccs. of fluid, each cc. containing anything from 10 to 80 units.

The Toronto unit, the universal standard, will promote the metabolism of approximately 2 gm. of glucose. It was an arbitrary standard set down with the early methods of preparation, see Journal of Biological Chemistry, October 1923, p. 717, et seq.

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REPORT ON ACCIDENT FOLLOWING THE USE OF DIPHTHERIA TOXIN-ANTITOXIN MIXTURE

EDGAR T. H. TSEN, M. Y. DZEN and H. T. CHANG
(From the National Epidemic Prevention Bureau, Peking.)

Three telegraphic reports were received from a certain hospital last December stating that sixty-four people were injected with our diphtheria toxin-antitoxin mixture lot No. 11 on December 13 and that, of this number, four had died from three to six days after injection and over thirty had developed serious illness.

I. PREPARATION OF DIPHTHERIA TOXIN-ANTITOXIN MIXTURE LOT NO. 11.

Before reporting our investigations and findings, we may state briefly our method of preparing our diphtheria toxin-antitoxin mixture lot No. 11. This lot of mixture was prepared on July 19, 1926, according to the latest formula (1/10 L. + dose of diphtheria toxin per cc. of mixture) of Dr. W. H. Park, Director of the Bureau of Laboratories and Research, New York City Department of Health. The toxin used (No. 76) was made from Martin's peptone broth on April 21, 1924, or about 27 months old, and its L. + dose at the time of use was 0.22 cc. The antitoxin used (No. 53) was prepared on August 11, 1924 or about 23 months old, and its titer at the time of use was 340 units per cc. The salt solution used for dilution was 0.85 per cent sodium chloride in distilled water. The necessary amount of tricresol to make its concentration 0.3 per cent in the final mixture was added to the salt solution before the latter was added to the antitoxin. In making up the mixture, 2.35 cc. or 799 units of the unconcentrated antitoxin were first diluted ten times with 21.15 cc. of salt solution and then the diluted antitoxin was added to 220 cc. or 1,000 L. + doses of the undiluted toxin. The mixture, owing to the lack of a big shaking machine, was shaken by hand a few minutes at a time for about two hours, and then further diluted with 9,756.50 cc. of salt solution. The total volume of this mixture was 10,000 cc. each containing 1/10 L. + dose of toxin. The
final product was filtered through a Berkefeld filter on the same after­noon and then tested for sterility, toxicity and preservative.

Tests for Toxicity:—The first test for toxicity was made on July 29, or ten days after the mixture was prepared. It was found to be too toxic, as all the guinea pigs injected with 5 cc. and 1 cc. amounts died within 76 hours. On August 16, 0.44 cc. or about 150 units, of the same lot of antitoxin (No. 53) was added. Two days later, August 18, a second test for toxicity was made, and the results showed that the mixture was now satisfactory for use, as can be seen from Table I.

Table I.

<table>
<thead>
<tr>
<th>Pig Weight Gm.</th>
<th>Injected Cc.</th>
<th>Paralytic Days</th>
<th>Death Days</th>
<th>Death Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>260</td>
<td>1</td>
<td>21</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>270</td>
<td>1</td>
<td>21</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>270</td>
<td>5</td>
<td>—</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>260</td>
<td>5</td>
<td>—</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>270</td>
<td>5</td>
<td>—</td>
<td>3</td>
<td>20</td>
</tr>
</tbody>
</table>

In order to re-assure ourselves, a confirmatory test was made on August 25, and it again showed that the mixture was satisfactory, as the two guinea pigs (only two were used) injected with 5 cc. each died in 4 days and 18 hours and 5 days and 18 hours.

Tests for Sterility and Preservative:—The results of these tests were satisfactory.

Filling.—The whole amount of this lot of mixture was filled for issue at one sitting on the morning of September 13 into 184 1-cc. ampoules, 202 20-cc. bottles and 133 40-cc. bottles.

II. INVESTIGATION

Immediately after receiving the first report, we sent telegrams and letters to all the other hospitals that had bought this lot of mixture directly from this Bureau asking them to stop using it until further notice and requesting them, if they had already used it, to give us the results they had obtained from its use by filling in an Investigation Form.
At the same time we sent a telegram to the first hospital asking for a detailed account of the accident, and that hospital, in reply invited us to conduct an investigation. Then we had many bottles of our reserve stock of this lot of mixture retested for sterility and toxicity both in this Bureau and by Professor Carl TenBroeck of the Peking Union Medical College. One of us (M.Y.D.) was also sent to the first hospital to make a thorough investigation of the accident. Later we also requested all the hospitals that had this lot of mixture to send one bottle to Professor TenBroeck direct and to return one to us for examination. The following are the clinical and laboratory findings.

**Clinical Findings.**

One 20-cc. bottle of our diphtheria toxin-antitoxin mixture lot No. 11 was issued to a certain hospital on November 23 and received on the 28th. It was then sent from this hospital on December 4 to the hospital that had the accident, received by the latter on the 11th and used on the 13th. Owing to the large number of people to be injected that day and to the fear that those who received their last dose of mixture more than ten days before might develop anaphylactic reactions after using the full dose, this bottle of mixture was diluted four times (1 part mixture to 3 parts diluent) so that each person, when given 1 cc. of the diluted mixture, would on that day receive but only one-fourth of the full dose. The diluent used was said to be distilled water that had been autoclaved three times, although the man who made the dilution was told by his Chief to use sterile physiological salt solution. Altogether eighty-nine people were injected with the diluted mixture—nine, who were last injected more than ten days before, were each given 0.2 cc., and they showed no bad reactions; two, who received their last injection six days before, were each given 0.5 cc., and they also showed no bad reactions; of the remaining
seventyeight (sixty-six received their last injection six days before and twelve were to receive their first dose of mixture that day), seventy-seven were each given 1 cc. and one 2 cc. Of these seventy-eight people, thirty-six had no bad reactions, four had only a slight general reaction, five had died from three to thirteen days after injection, and thirty-three had single or multiple abscesses on their arms and other reactions of varying intensities like the following case.

S. C., age 28.

Dec. 13. Received his third dose of mixture.
14. High fever, nausea, swollen arm.
15. High fever, vertigo, swollen and painful arm, red spots on body.
16. Temperature 104, pulse 128, vertigo, swollen arm.
17. Admitted to hospital, temperature 104, pulse 105, dizziness, swollen arm.
18. Temperature 103, pulse 118, vertigo, swollen arm. Abscess of arm opened.
19. Temperature 102, pulse 90, rash on chest remaining.
20. Condition much improved, temperature 100.5, pulse 82.
22. Good.
23. Good.
24. Good.

The symptoms of the five deaths were recorded as follows:

I. Boy, age 15 years.

Dec. 13. Received his second dose of mixture.
15. Red spots on whole body, comatose, diarrhoea.

II. Girl, age 11 years.

Dec. 13. Received her second dose of mixture. Looked indisposed.
14. High fever, nausea, vomiting, diarrhoea, blood in vomitus and stools.
15. Arm swollen and painful, rash over whole body, vigil, comatose, fever, vomiting.
16. Temperature 103.5, pulse 145, rash, severe coma, death.

III. Boy, age 9 years.

Dec. 13. Received his second dose of mixture.
14. High fever, nausea, rash on body, general weakness.
15. High fever, rash, arm swollen and painful.
16. Rash on whole body, temperature 108, pulse 120.
17. Unknown.
18. Unknown.
19. Death.

IV. Girl, age 13 years.

Dec. 13. Received her second dose of mixture.
14. High fever, swollen arm, nausea, dizziness.
15. Scarlatiform rash over whole body.
16. Temperature 104, pulse 130, nausea, rash.
V. S. K. C., barber, age 24 years.

Dec. 13. Received his third dose of mixture.
14. Dizziness, nausea, high fever, pain in arm.
15. Increased swelling of arm, a few rashes on chest, high fever.
16. Admitted to hospital—dizziness, swollen arm, temperature 102.5°F., rashes disappeared.
17. Dizziness, headache, temperature 103.0°F., pulse 132, arm swollen and severely painful.
18. Abscess of arm opened, temperature 104°F., pulse 132.
19. Temperature 102, pulse 128, arm more swollen, operated again.
20. Temperature 102.5 pulse 120, occasional delirium.
21. Temperature 101, pulse 126, comatose, gangrenous arm.
22. Temperature 101, pulse 126, vomiting, gangrene enlarged.
23. Temperature 103, pulse 138, vigil, comatose.

The abscesses on the arms were deep—intramuscular—although all the injections were supposed to have been made under the skin. The pus from several abscesses had been examined and found to contain streptococcus.

On December 14, the next day, when seven other people were injected in the same hospital with the same lot of mixture in ampoules received from this Bureau direct without dilution, no bad reaction occurred in any. One of these seven people was a nurse of the hospital. She had attended to a case of scarlet fever in the hospital three days before she was injected and developed scarlet fever herself one day after.

This lot of mixture had also been used by four other hospitals—three had met no bad reactions, while one reported bad but non-fatal results. This hospital was in the same province as that which had the accident. We wrote to this hospital for detailed information on January 11, but, no reply was ever received.

Laboratory findings.

From laboratory tests, both Professor TenBroeck and we have found that this lot of mixture was not at fault. Our own findings were as follows:

1. Tests for sterility:—This lot of mixture was tested, as a routine procedure, both at the beginning and end of filling for sterility and each time found to be sterile. After the reports regarding the accident
were received, more than ten bottles of our reserve stock as well as many bottles of this lot of mixture returned from the different hospitals were retested. The medium used was meat infusion blood bouillon. No bacterial growth was ever detected in any instance.

2. Tests for toxicity:—The results of these tests are given in Table II. It can be seen that our mixture 10 No. 11 was satisfactory for use. Professor TenBroeck concluded his first report as follows:

"This mixture should be ideal for immunization against diphtheria for it has a slight toxicity as shown by the induration in the guinea pigs. The 5 cc. amounts did not cause death in five days which agrees with the standard test as used in the United States."

3. Examinations of pus:—Two specimens of pus from two of the people who were injected on December 13 in the hospital that had the accident had been sent to Professor TenBroeck and us for bacteriological examination and were both found to contain pure cultures of hemolytic streptococcus.

We were told that specimens of pus from several other patients had also been examined microscopically in the hospital that had the accident. One showed Gram negative cocci, and the rest streptococci.

4. Tests on streptococcus:—The development of abscesses in so many people and the presence of streptococcus in all the specimens of pus that had been examined would indicate two possibilities—either that one bottle of our mixture was contaminated with this organism at the time of filling or that the patients were infected during or after injection. So, on January 6, we made an experiment to determine the length of time that this organism could live in the mixture. We inoculated one 40-cc. bottle of this lot of mixture with 1 cc. of an 18-hour broth culture of hemolytic streptococcus isolated from one of the two specimens of pus sent to us for examination, and then kept the inoculated mixture in the refrigerator and cultured it at two day intervals in blood bouillon. We found that this organism could not live in this mixture for more than eight days. This experiment was repeated on January 13 with the same result.

5. Test on freezing:—Fearing that cold weather might freeze this mixture and produce some deleterious effects on it, we purposely had a few bottles of our mixture lot No. 11 frozen solid for few days and then thawed at room temperature and tested on guinea pigs. The results which we shall report in detail separately showed that freezing produced no bad effects on them. In fact, the frozen mixtures were less toxic than the unfrozen control. Furthermore, we have tested three bottles of this lot mixture returned from three different hospitals. They were cloudy and contained precipitate, probably due to freezing, but showed no increased toxicity.
Table II
TOXICITY TESTS ON DIPHTHERIA T.-A. MIXTURE No. 11

<table>
<thead>
<tr>
<th>Source</th>
<th>Guinea pig Gm.</th>
<th>Mixt. inj. Cc.</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.E.P.B. reserve stock</td>
<td>260</td>
<td>5</td>
<td>Death 4 days 8 hrs.</td>
</tr>
<tr>
<td></td>
<td>260</td>
<td>5</td>
<td>&quot; 2 &quot; 5</td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>1</td>
<td>&quot; 3 &quot; 15 &quot; (Toxic pneumonia)</td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>1</td>
<td>&quot; 10 &quot; 15 &quot;</td>
</tr>
<tr>
<td></td>
<td>280</td>
<td>1</td>
<td>No paralysis. Released 28 days.</td>
</tr>
<tr>
<td>N.E.P.B. reserve stock</td>
<td>300</td>
<td>5</td>
<td>Death 12 days 12 hrs.</td>
</tr>
<tr>
<td></td>
<td>310</td>
<td>5</td>
<td>&quot; 6 &quot; 12 &quot;</td>
</tr>
<tr>
<td></td>
<td>280</td>
<td>1</td>
<td>&quot; 7 &quot; 12 &quot;</td>
</tr>
<tr>
<td></td>
<td>300</td>
<td>1</td>
<td>No paralysis. Released 32 days.</td>
</tr>
<tr>
<td>N.E.P.B. reserve stock</td>
<td>255</td>
<td>5</td>
<td>Death 4 days 8 hrs.</td>
</tr>
<tr>
<td></td>
<td>270</td>
<td>6</td>
<td>&quot; 4 &quot; 4 &quot;</td>
</tr>
<tr>
<td></td>
<td>270</td>
<td>5</td>
<td>&quot; 5 &quot; 9 &quot;</td>
</tr>
<tr>
<td></td>
<td>270</td>
<td>5</td>
<td>&quot; 3 &quot; 9 &quot;</td>
</tr>
<tr>
<td></td>
<td>260</td>
<td>5</td>
<td>&quot; 2 &quot; 5 &quot;</td>
</tr>
<tr>
<td></td>
<td>270</td>
<td>1</td>
<td>No paralysis</td>
</tr>
<tr>
<td></td>
<td>260</td>
<td>1</td>
<td>Marked paralysis 21 days Released 82 days.</td>
</tr>
<tr>
<td></td>
<td>260</td>
<td>1</td>
<td>No paralysis</td>
</tr>
<tr>
<td>N.E.P.B. reserve stock</td>
<td>320</td>
<td>5</td>
<td>Death 7 days 10 hrs.</td>
</tr>
<tr>
<td>Fenchow Hospital, Shansi</td>
<td>280</td>
<td>5</td>
<td>Paralysis 21 days. Released 32 days.</td>
</tr>
<tr>
<td></td>
<td>260</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>260</td>
<td>1</td>
<td>No paralysis. Released 32 days.</td>
</tr>
<tr>
<td>Taiku Hosp. Shansi</td>
<td>260</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>260</td>
<td>5</td>
<td>No paralysis. Released 32 days.</td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Brethren Hospital, Ping Ting</td>
<td>250</td>
<td>5</td>
<td>Death 6 days 16 hrs.</td>
</tr>
<tr>
<td>Ghow Shansi</td>
<td>250</td>
<td>4.5</td>
<td>Paralysis 14 days. Released 31 days.</td>
</tr>
<tr>
<td></td>
<td>260</td>
<td>1</td>
<td>Death 6 days 16 hrs. (Toxic pneumonia)</td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>1</td>
<td>No paralysis. Released 31 days.</td>
</tr>
<tr>
<td>Mission Hospital, Shanhaikuan</td>
<td>270</td>
<td>5</td>
<td>Death 3 days 18 hrs.</td>
</tr>
<tr>
<td></td>
<td>290</td>
<td>1</td>
<td>No paralysis. Released 30 days.</td>
</tr>
<tr>
<td></td>
<td>270</td>
<td>1</td>
<td>Paralysis 19 days. Released 30 days.</td>
</tr>
<tr>
<td>Temple Hill Hosp. Chefoo</td>
<td>260</td>
<td>1</td>
<td>No paralysis. Released 30 days.</td>
</tr>
<tr>
<td>E.I. Graham Hospital, Haichow, Ku.</td>
<td>260</td>
<td>5</td>
<td>No paralysis. Released 29 days.</td>
</tr>
<tr>
<td></td>
<td>260</td>
<td>5</td>
<td>Paralysis 13 days. Released 29 days.</td>
</tr>
<tr>
<td></td>
<td>260</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>280</td>
<td>1</td>
<td>No paralysis. Released 29 days.</td>
</tr>
</tbody>
</table>
6. **Test on dilution**:—When Dr. Dzen returned from his investigation he brought back with him one 40-cc. bottle of the unused diphtheria toxin-antitoxin mixture lot No. 11 and one bottle of distilled water, which, he was told, was prepared in the same way as the water used for diluting the mixture on December 13 was. On January 17, the day after Dr. Dzen returned, we diluted 10 cc. of the mixture with 30 cc. of the water brought back and injected fourteen guinea pigs as follows: three with 5 cc. each and five with 1 cc. each of the diluted mixture, and three with 5 cc. each and three with 1 cc. each with the undiluted portion of the mixture from the same bottle. None of the animals have yet shown any sign of intoxication, although two months have passed since they were injected.

The following are the reports of Professor TenBroeck and of the independent investigating committee consisting of Dr. Carl TenBroeck, Professor of Bacteriology and Head of the Department of Pathology, Peking Union Medical College, Surgeon-General S. H. Chuan, Director of the Public Health Demonstration Station of the Peking Metropolitan Police Department, and Dr. Robert Koch of the German Hospital, Peking.

**REPORT ON THE EXAMINATION OF DIPHTHERIA TOXIN ANTITOXIN NO. 11**

*produced by the NATIONAL EPIDEMIC PREVENTION BUREAU.*

The committee appointed to investigate diphtheria toxin antitoxin No. 11 produced by the National Epidemic Prevention Bureau has confined its study to testing the sterility and toxicity of the product.

**Sterility.** The contents of 51 cc. ampoules of the mixture received from the — Hospital* and 1 cc. from a 40 cc. bottle obtained from the N. E. P. B. were each transferred to blood bouillon which was incubated at 37°. In not a single instance could we detect growth in these inoculated tubes.

**Toxicity.** Three guinea-pigs weighing about 300 gms. were each inoculated subcutaneously with the contents of an ampoule of the mixture (slightly more than 1 cc.) received from the — Hospital.* They showed a slight local lesion but are alive and well eleven days after inoculation when this report is written.

Three other guinea-pigs were injected each with about 1 cc. of the mixture that had been kept at about 0° C. for six days and had been frozen for three more days. Four days after the injection these guinea-pigs showed no local lesion.

*The hospital that had the accident.*
Conclusion: Toxin antitoxin mixture No. 11 is, as far as we can determine, sterile and does not contain an excess of toxin. Freezing does not increase the toxicity of the mixture.

Signed: Carl TenBroeck
S. H. Chiüan
Robert Koch

SUPPLEMENTARY REPORT OF EXAMINATION MADE OF THE NATIONAL EPIDEMIC PREVENTION BUREAU TOXIN ANTITOXIN MIXTURE NO. 11.

By Carl TenBroeck

Upon receiving word that bad results had followed the use of the mixture in — Hospital, * it was decided that an independent investigation should be made to determine, if possible, the cause of the trouble.

Our first thought was that the mixture injected was toxic so a number of guinea-pigs weighing about 300 grams were inoculated with from 1 to 5 cc. of the mixture obtained from the Bureau’s reserve supply. The results show that the mixture as prepared is not toxic.

We soon learned that the trouble appeared to be due to an infection with a haemolytic streptococcus and then requested that all those that had received the mixture be asked to send to us directly a sample for test. The source of the specimens and the results of the tests made are given in Table III. Most of the specimens came to us direct by mail and those that were sent to the Bureau’s office were forwarded to us unopened.

Tests for sterility. Tubes containing 20 cc. of standard bouillon plus about 0.5 cc. horse blood were used to determine the presence of organisms in the mixture. Each tube was inoculated with about 1 cc. of mixture and from two to five tubes were inoculated from each lot received. Something over 23 cc. in all were tested from seven different lots and in not a single instance did we find bacteria present.

Tests for toxicity. The guinea-pig inoculations show that free toxin was not detected in a single instance.

Since the mixture that caused the trouble was diluted with distilled water we made one experiment to see whether this procedure would liberate toxin. The results show that the diluted mixture is no more toxic than the undiluted.

Streptococcidal action of the mixture. In order to determine how long haemolytic streptococci would live in the mixture the following experiment was done. On January 31st, 1927 a few drops of a

*The hospital that had the accident.
Table III
Tests Made on Diphtheria Toxin-Antitoxin Mixture No. II.

<table>
<thead>
<tr>
<th>Source</th>
<th>Date rec'd</th>
<th>Amt. rec'd.</th>
<th>Test for Sterility</th>
<th>Test for Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>N. E. P. R.</td>
<td>Dec. 18, 1926</td>
<td>29 cc. bottle</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yenching University</td>
<td>Jan. 9, 1927</td>
<td>3-1 cc. ampoules</td>
<td>2 cc.</td>
<td>negative</td>
</tr>
<tr>
<td>Dr. Watson Fenchoy</td>
<td>Jan. 14, 1927</td>
<td>40 cc. bottle</td>
<td>4 + cc.</td>
<td>&quot;</td>
</tr>
<tr>
<td>Tehchow</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temple Hill Hosp.</td>
<td>Jan. 17, 1927</td>
<td>3-1 cc. ampoules</td>
<td>2 cc.</td>
<td>&quot;</td>
</tr>
<tr>
<td>Chefoo</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fenehow</td>
<td>Jan. 19, 1927</td>
<td>6-1 cc. ampoules tested</td>
<td>5 cc.</td>
<td>&quot;</td>
</tr>
</tbody>
</table>
centrifuged bouillou culture of streptococci, isolated from a swab sent to us by Dr. Watson, was suspended in 20 cc. of the mixture. This mixture was kept at about 5° C., and plates made at intervals with the following results.

<table>
<thead>
<tr>
<th>Date</th>
<th>Days</th>
<th>Number of streptococci per cc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 31</td>
<td>0</td>
<td>4,600,000</td>
</tr>
<tr>
<td>Feb. 1</td>
<td>1</td>
<td>290,000</td>
</tr>
<tr>
<td>Feb. 4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Feb. 7</td>
<td>7</td>
<td>No streptococci in 3 cc.</td>
</tr>
</tbody>
</table>

It seems probable that the dying off of the streptococci is due to the action of the trikresol combined with the poor nutritive properties of the mixture.

Conclusions. Our tests show that Diphtheria Toxin-Antitoxin Mixture No. 11 as prepared and sent out by the Bureau is sterile and non-toxic and that haemolytic streptococci in great number cannot live longer than seven days.

Signed: Carl TenBroeck,
Professor of Bacteriology,
Peking Union Medical College.

It was suggested that one bottle of this lot of mixture might be at fault while the rest were not, but this seems to be very unlikely for the following reasons:

1. One bottle of mixture could not contain more toxin than the rest when they were all filled on the same morning, from the same stock bottle, in the same way, with the same apparatus and by the same man.

2. Thirty-three of the eighty-nine people injected on December 13 had single or multiple abscesses on their arms and the bacteriological examinations indicated that they were due to streptococcus infections. This mixture was filled on September 13, just three months before it was used in the hospital where the accident occurred, and both Professor TenBroeck and we have found that this streptococcus could not live in it for more than seven or eight days.

3. Freezing did not increase the toxicity of the mixture.

4. There might be a crack in the bottle thus allowing the streptococcus to get into the bottle as had been suggested, but if that was actually the case, the mixture in the bottle would have leaked out. No cracking of the bottle or any loss of mixture was ever reported.

A few more words may be said about the toxicity of the mixture. There were about 4.4 M.L.D.'s of toxin in each cc. of our diphtheria toxin-antitoxin mixture lot No. 11. After having been diluted four
times, there were only about 1.1 M. L. D.'s of toxin in each cc of the diluted mixture, which amount was capable of killing a child weighing only a little more than half pound, provided human beings and guinea pigs are equally susceptible.

**Summary.**

All the findings may be summarized as follows:

1. Of the eighty-nine people injected with our diphtheria toxin-antitoxin mixture lot No. 11 in a certain hospital last December 13, forty-seven had no bad reactions, four had slight general reactions, thirty-three had single or multiple abscesses on their arms and other local and general reactions of varying degrees, and five had died from three to thirteen days after injection.

2. Before use, this bottle of mixture was diluted four times with a diluent which was said to be distilled water that had been autoclaved three times. When this same lot of mixture was used in this and three other hospitals without dilution, no bad reaction ever occurred.

3. One nurse of the hospital where the accident occurred attended to a case of scarlet fever in the hospital three days before she was injected and developed scarlet fever herself one day after. She had no bad reactions from the injection of mixture.

4. Only two specimens of pus from two patients had been examined culturally and were both found to contain pure cultures of hemolytic streptococcus. Of the several specimens of pus from the other patients that had been examined only microscopically, one showed "Gram negative cocci" and the rest streptococci.

5. Laboratory findings showed that
   a. our diphtheria toxin-antitoxin mixture lot No. 11 was sterile and of proper toxicity;
   b. dilution with genuine sterile distilled water and freezing did not increase the toxicity of the mixture; and
   c. hemolytic streptococcus isolated from the pus sent to us for examination could not live in the mixture for more than seven or eight days. (The intervening period between the filling and using of this lot of mixture was three months.)
THE RING TEST FOR TUBERCULOUS ACTIVITY AND ITS RELATION TO DISEASES IN CHINA.*

J. HORTON DANIELS, M. D. AND GRACE BAUER,
University Hospital, Nanking, Ku.

To determine tuberculosis in its active stage by laboratory means has long been attempted, and the purpose of this paper is to set forth briefly the successes and failures in our hands of some of the methods more recently emphasized. With utmost care in the taking of history, physical signs, X-rays, and repeated sputum examinations we all realize our difficulties in this diagnosis of tuberculosis, especially in the early or quiescent stages, when activity lurks below the level of clinical symptoms. The Von Pirquet Test is valuable in indicating the development of resistance against tuberculosis but is in no way proof of activity. The other tuberculin tests have their distinct disadvantages, at least for routine procedure. The use of the Ring Test came to our attention last year when coming in contact with work of Dr. W. P. Larson and colleagues at the University of Minnesota. (Larson, Montank, Nelson—1923, Montank—1924, 1925, Meyers—1925). In their work covering a series of about 8000 cases they (Larson) have found that "98% to 99% of known tubercular patients give the positive test and only about 0.7% of healthy young adults give the positive test". After various attempts with specific and non-specific solutions layered over blood sera, he finally decided on the use of tricresol, which gave a cloudy ring at the junction of the solutions in cases of active tuberculosis.

TRICRESOL TEST.

The ring test for active tuberculosis, after a little practice, is quite simple and easy to carry out. For the performance of the test are required clear blood serum; 0.2% tricresol in physiologic saline solution; small test tubes 5 to 6 mm. in diameter and pipettes drawn out to a fine point.

The blood is taken as for Wassermann. We collect the blood in a large test tube 18 mm. in diameter, slant it and allow blood to clot at room temperature. When clotted it is placed in slanting position in refrigerator. After several hours it is placed upright. After 24 hours the clear serum will have separated from the blood clot. This may then be poured off and is ready for use. We have found that 24 hour serum is the best for the test. 48 hour serum may be used, but after that its use is not advisable.

*Read at the China Medical Conference in Peking, September, 1926.
The 0.2% tricresol solution is made up by adding 0.2 ml. of tricresol to 100 ml. of physiologic saline and well shaken. The saline should preferably be freshly prepared.

The test is carried out by pouring or placing with a pipette 0.2 to 0.3 ml. of clear blood serum into the small tube. Using a pipette the serum is carefully overlaid with an equal amount of 0.2% tricresol solution. The tube is then placed in the incubator at 37.5 degrees Centigrade for two hours. At the end of this period with a positive serum, that is one from an active case of tuberculosis, a milky ring develops at the zone of contact of the serum and tricresol, varying in depth from 1/2 to 3 mm. In negative bloods there is no sign of a ring at the zone of contact.

It is very important that the blood serum be as clear as possible. A lipoidal serum, that is one containing chyle or fat, will give a hazy, fuzzy ring that is not specific. We have found that there are clear sera which also apparently give false positives.

We take the liberty here of acknowledging our gratitude for the cooperative spirit in which Eli Lilly & Company have helped in advice, and especially in the donation of some of their new reagent "Tubercumet". This is layered over serum in the same way as the tricresol solution. Up to the present we have done 80 tests with the two solutions and the results have been very closely parallel. If anything we seem to get more positive reactions in doubtful cases with tricresol than with Tubercumet. Dr. Larson in a personal letter mentions the difficulty of standardizing tricresol and believes that the Tubercumet is apparently standardized. His most recent cases run with the two solutions are said to show Tubercumet to be the more specific of the two.

CLINICAL RELATION TO THE TEST.

In our hands certain cases have shown up strikingly while others have been discouraging. For example, two early cases we tested had been diagnosed tuberculous glands of the neck, but both had negative ring tests. Following up these cases personally, we found one to be a well nourished man with a four plus Wassermann and the other a school girl with a chronic antrum full of pus, the sinusitis and glands being unilateral. Neither case gave other evidence of tuberculous involvement. A university student came to the school clinic complaining only of pains in the chest and loss of energy. His lungs were apparently negative but his blood gave a strongly positive ring. About one month later he was admitted to the hospital with marked pulmonary hemorrhages and daily fever.

On the other hand a few cases with positive sputa, clinically both mild and severe, gave negative tests. Also many apparently normal
cases gave positive rings. A foreign school girl with an acute cardiac valvular lesion, running a daily temperature, gave a strong positive in three tests including Tubercunmet, but her lungs and her Von Pirquet test were negative. Maternity cases gave a high percentage of positives. One foreign case, who had had a tuberculous involvement of a few years previous, was followed up and found to have changed from four plus to negative test four weeks post-partum. The questions might be raised—was it a false positive or had the strain of pregnancy and labor lowered her resistance and a tuberculous activity temporarily developed? She and the baby gained splendidly. Acute colds in the head are reported to give false positives for a few days, but in the case of one of the writers it was found to persist for two months.

Turning now from impressions of individuals, we try to summarize 1,000 cases. Other cases which we have been unable to recheck clinically, either by review of records or personal examination, have been excluded. It must be acknowledged that our time and means for personal clinical observation as well as the details of our hospital records are far from adequate, but we have done what we could.

In separating these cases they have been classified:

1. Clinically
   A. Tuberculous  ...  ...  ...  ...  92
   B. Questionable  ...  ...  ...  ...  251
   C. Non-tuberculous  ...  ...  ...  ...  657

2. Ring Test
   A. Positive (with graduation from plus-minus to four plus)  ...  ...  ...  ...  533
   B. Negative  ...  ...  ...  ...  467

Obviously, in trying to determine the percent of error, it is impossible to use the group which are clinically questionable. Thus the error is based on the ratio of the negative tests in tuberculous plus the positive test in non-tuberculous to the total of tuberculous and non-tuberculous cases. In this larger group it is 40%. Very disappointing, but let us see what factors can be used to reduce this. First the known factors. (1) It seems only fair to eliminate the plus-minus rings from discussion, as mathematically they are neither positive nor negative. (2) All workers in this test have emphasized the necessity of clear sera. Our cases show 9% of the bloods to be turbid and of these over 90% are associated with positive rings in non-tuberculous cases—that is, the turbid serum gives a 90% chance of showing a false positive ring, presumably due to chyle or fat. (3) It has also been pretty generally agreed that severe and late stage tuberculosis may result in a negative test, which was the clinical state in 9 of the 19
negative reactions found in sputum-positive cases. Eliminating these three tangible factors, the per cent of error is reduced to 29%.

Among other sources of error—alcohol accidentally introduced into the blood by the needle, or otherwise, is reported to give a false positive reaction, but we have been unable to verify this. Certain diseases, such as coryza and bronchitis are reported to give false rings, which we found also, but in no constant proportions. We have thought some relations might be found with diseases peculiar to China as bronchial spirochetosis or kala-azar and schistosomiasis, the latter two especially because of their serum globulin reaction, but again no consistent results were obtained.

Faced with a 29% error we are forced to conclude either errors in technic or the existence of factors here in the Orient, diet or otherwise, which give a much larger proportion of nonspecific rings. To the best of our knowledge we are following the technic of Dr. Larson, (Montank, 1924) yet there is a sharp contrast between his 0.7% positive in 2,500 normal students and our 26% in 84 normal students. With the Tubercumet our technic has followed Lilly's (Eli Lilly & Company—Tubercumet) description as closely as possible, but our results have been only a trifle more satisfactory than with tricresol. Here again we have a big error compared to the 7% error stated in Lilly's booklet on Tubercumet. Dr. Buswell who has been using the tricresol test in the sanitarium at Kuling tells us he had about 200 tests with no failures, but the data were all lost in the fire. Since then the results have not been so good. Maternity cases were interesting in that there were no turbid sera but 11 positives in a total of 16 cases. 4 of these were clinically questionable, but even 7 false rings in 12 is a large percentage and suggests pretty definitely a factor in this condition producing a non-specific "fat ring". Twelve student nurses all showed one plus rings, which we concluded must have been related to recent typhoid inoculations.

Whatever may be the chemical reaction causing these non-specific rings in both turbid and clear sera, one ray of hope comes in at the eleventh hour in a recent letter from the home laboratories of Eli Lilly Company, suggesting a new method of reading the test after 24 hours, presumed to differentiate these specific and non-specific rings. After the 2 hour incubation reading has been made the tubes are set aside at room temperature for the remainder of the 24 hours. A positive ring will leave the interface of the two solutions and rise to the upper surface. If this ring is not visible to the naked eye, the tube, when slightly and gently agitated will show a clouding of the Tubercumet solution from its surface down towards the blood serum. A fat ring, or non-specific ring, will remain at the interface of the solutions or disappear.
The last 60 cases, in which parallel tests were done with tricresol solutions and Tubercumet, were read by the above method and the results were found to be in close agreement, showing the same advantage in reading tricresol tests after 24 hours as was advocated for the Tubercumet. Among the cases considered non-tuberculous 10 gave positive rings at the end of the 2 hour incubation after 24 hours at room temperature, 9 were negative while only one remained positive.

We had only a short period of time in which to try out this last suggestion. It makes the reading more delicate, hence more difficult, but we believe the results more accurate. If we are thus able to reduce our error of 29% there is hope that this may prove to be a simple, inexpensive and valuable aid in the detection of tuberculous activity.

**Summary.**

1. The ring test for tuberculous activity has recently received new interest as a diagnostic and therapeutic indicator.

2. The tricresol test is performed by layering 0.2% tricresol in normal saline over clear blood sera 24 hours old. The first reading is made after 2 hours incubation the presence of a cloudy ring at the interface (as in the nitric acid test of urine) presumably indicating active tuberculosis. The second reading after 24 hours at room temperature shows a specific ring to have risen from the interface to the top surface.

3. Tubercumet (Lilly), a specific and standardized reagent has been used in 80 cases paralleling the tricresol test with only very slightly better results. In 60 cases the 24 hour reading was also made, again with practically no difference in the readings of the two solutions.

4. In our series of 1000 tests, after eliminating questionable clinical cases, the error was 40%. Further eliminating first plus-minus rings, second terminal clinical tuberculosis and third turbid sera, the error was reduced to 29%.

5. Presence of lipoids in clear sera is presumably the cause of a large part of this error. The 24 hour reading will apparently differentiate these fat rings from the specific ring due to tuberculosis, but time has been insufficient on this point to draw conclusions.

**References.**


Montank, I. A. The reaction of tubercular serums to phenol, Ibid, 1924, XXI, 547.


THE NEW DEPARTMENT OF HEALTH, PORT OF SHANGHAI & WOOSUNG.*

Hou-Ki Hu, M.D., Dr. P. H., Late Deputy Commissioner.†

FOREWORD.

The Special Area, created last year, made known as the Port of Shanghai & Woosung, is constituted of Nantao, Chapei, Pootung, Kiangwan and Woosung with a combined population approximately of one million. In other words the Port of Shanghai & Woosung is composed of the whole Shanghai Hsian (District) and part of Paoshan. To facilitate the Administration in this Special Area the Directorate of Port of Shanghai & Woosung was established last May and Dr. V. K. Ting appointed to be the first Director. He has been solely responsible for the organization and establishment of the administrative machinery of the Directorate. Largely due to Dr. Ting's effort together with the enthusiasm of Messrs T. Y. Yen, the former Commissioner of Police, and Li Pin Sze a prominent local gentleman, the decision has been reached to consolidate the existing nominal health departments of both the police and civil authorities. Later the writer was appointed to be the Deputy Commissioner and entrusted with the work of consolidation and organization of the New Department of Health which was officially inaugurated on August 24th, 1926, after three weeks for necessary preparations.

THE ORGANIZATION AND PERSONNEL OF THE DEPARTMENT.

The New Department of Health is one of seven sub-departments of the Directorate and at present has only three Divisions viz. Division of Sanitation & Street Cleaning, Division of Vital Statistics, Regulation of Practice of Medicine & Meat Inspection, and Division of Communicable Disease Control & Laboratory. Each Division is supervised by one chief, assisted by two junior officers and a few clerks. Besides these, two trained technical assistants are employed in the Laboratory.

*Read at a meeting of the Shanghai Branch of the China Medical Association.
†We understand that after a brief absence from office Dr. Hu has again been appointed to this post.—Editor.
under the personal supervision of the chief. The Department has one Commissioner, concurrently the Commissioner of Police for Port of Shanghai & Woosung, also one technical Deputy Commissioner who is responsible for the health administration. All the senior officers are appointed by the Directorate, and the junior officers as well as other employees by the Commissioner. On the present staff there are six university graduates of whom three have received advanced training abroad.

The purpose of the present arrangement in having the Commissioner of Police acting as Commissioner of Health is to secure better co-operation from the police in view of the necessity of pioneer work. The difficulty is to secure enough trained men for the various positions of the Department in view of the low salary scale and scarcity of qualified men in China.

In addition to the three Divisions mentioned above there is a Board of Health composed of 12 members and the function of this Board is to advise and recommend to the Commissioner of Health the policy of health administration for this Special Area.

THE BUDGET OF THE DEPARTMENT.

The Department is supported from the funds derived from three sources namely the Directorate, Nantao Municipality and Police Department of Port of Shanghai & Woosung. The proportion of the funds contributed by the institutions concerned is as follows:

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Directorate</td>
<td>$78,000.00</td>
</tr>
<tr>
<td>Nantao Municipality</td>
<td>68,884.00</td>
</tr>
<tr>
<td>Department of Police</td>
<td>11,908.00</td>
</tr>
<tr>
<td>Fees collected by Department of Health</td>
<td>1,636.00</td>
</tr>
<tr>
<td>Grand total</td>
<td>$160,428.00</td>
</tr>
</tbody>
</table>

The appropriation has been fixed and approved for the first year as follows:

Administration & Laboratory

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries for the staff</td>
<td>$29,160.00</td>
</tr>
<tr>
<td>Wages for scavengers &amp; sanitary police</td>
<td>72,088.00</td>
</tr>
<tr>
<td>Printing, stationery, publicity</td>
<td>4,560.00</td>
</tr>
<tr>
<td>Uniforms for sanitary police &amp; scavengers</td>
<td>6,000.00</td>
</tr>
<tr>
<td>Housing</td>
<td>2,520.00</td>
</tr>
<tr>
<td>Miscellaneous expenses</td>
<td>3,000.00</td>
</tr>
<tr>
<td>Capital equipment</td>
<td>4,700.00</td>
</tr>
<tr>
<td>Street cleaning (removal of refuse by contract, repair &amp; purchase of refuse carts, boxes and brooms, maintenance of water carts etc.)</td>
<td>27,200.00</td>
</tr>
</tbody>
</table>
Communicable disease control 7,200.00
Laboratory equipment 4,000.00
Grand total 160,428.00

From the foregoing it is obvious that the cost of street cleaning is over 60% of the total budget of the Department and less than 40% is for pure health work only. To fix the appropriation for street cleaning we have taken into consideration the expenditures of the former street cleaning departments of Nantao and Chapei as a basis. Naturally it is most desirable to increase the budget for pure health work whenever the funds can be provided in the near future.

The Present Health Activities.

The present health activities are limited to:
1. Sanitation & street cleaning.
2. Vital statistics, regulation of practice of medicine and meat inspection.
3. Communicable disease control and laboratory.

Sanitation and street cleaning. The present sanitary activities are chiefly refuse and feces removal. For refuse removal 430 scavengers are employed on full time whose routine work is to sweep the streets and carry the refuse in wheelbarrows and dump into the boats by which the refuse will be transported to certain dumps. The monthly wages for scavengers at present are fixed at ten dollars and fifty cents mex. To facilitate the supervision of street cleaning Nantao has been divided into 8 sections and Chapei into 6. Each section has one supervisor who makes inspections and supervises the scavengers. The conditions of the streets are greatly improved now, nevertheless, they can be made better provided the residents will co-operate with the Department.

The feces removal is under contract. The contractors pay a sum of approximately $140,000.00 a year for ordure privileges in Nantao and Chapei. The removal may be considered satisfactory from a hygienic view in respect to the present living standard of the Chinese.

Fly and mosquito control is to be carried out more extensively in Nantao and Chapei this year. Under the technical supervision of a trained worker two dozen men are employed and they will receive some instruction in doing the field work. Special attention is directed towards the elimination of breeding places as we consider this the cheapest and most efficient method.

The chlorination of water has been compulsory since last fall. At present the Water Works Companies in Nantao and Chapei are requested to chlorinate the water which is to be regularly checked by bacteriological examination in the laboratory.
The China Medical Journal.

The training of sanitary police is in progress. A School for Training Sanitary Police was established last October and 80 students were admitted after having successfully passed the required entrance examinations. It is scheduled to give the students six months of training in the principles of hygiene and police regulations. Gradually the slackers have been eliminated and after five months of training only 32 students are left, who will complete the course of training at the end of March this year. Upon graduation they will be assigned to field work: that is to conduct sanitary inspections and investigate deaths and births etc. All the sanitary police will be directly under the charge of this Department instead of the Police.

Vital statistics, regulation of practice of medicine, meat inspection. The initial steps taken to secure data of vital statistics are limited to deaths only. Undertakers and charity institutions as well as any establishments where coffins are sold or given free are supplied with special forms to be duly filled up whenever a request for a coffin is made. In addition to the above arrangement the scavengers are obliged to report any dead infant found in the refuse box to their respective supervisors, who then report the death to the Department. As soon as the graduation of the specially trained sanitary police is completed the collecting of data concerning deaths and births will be carried out more systematically. In regard to the certification of the causes of deaths this is dependent upon the raising of physicians' standards and for the time being will be put off.

Regulations for the practice of medicine have been inaugurated regardless of strong opposition from the native trained Chinese physicians. After three months strenuous work the arrangements for registration of both western trained and native trained Chinese physicians have been completed for the first time in Shanghai. Approximately four hundred western trained and thirteen hundred native trained Chinese physicians are duly registered at the Department. Two sets of regulations are designed for both types of Chinese physicians. The foreign doctors who expect to practise in the Port of Shanghai & Woosung are also requested to be registered at this Department and the regulations for western trained physicians are applicable to foreign doctors too.

Meat inspection at present is limited to the hams and meat products for export. Two American trained veterinarians are employed by the Department for meat inspection and certification. This activity has been transferred to us from the Police Department since the inauguration of this Department. As to the meat for local consumption the inspection is carried out only occasionally owing to the small staff.
Communicable disease control & laboratory. The hospitalization of communicable diseases is not attempted in view of lack of accommodation in local hospitals. The present activities concern the prevention of the most prevalent diseases namely smallpox, cholera, typhoid and other gastro-intestinal diseases. An intensive smallpox campaign has been carried out by establishing eleven clinics for free vaccination. Besides all the pupils of the public schools in this Special Area are requested to be vaccinated against smallpox. During the Winter months the average number of vaccinations has been one thousand a month and the number will be greatly increased in the Spring provided the local chaotic conditions are soon over. Cholera vaccinations will be given free from next May at these clinics.

To educate the community in prevention of smallpox and cholera four hundred thousand smallpox prevention handbills and two hundred thousand cholera prevention handbills have been distributed among all the families in this Special Area during the preceding six months.

The Laboratory of the Department is fairly well equipped for diagnostic work. In addition to the above function the examination of city water, milk and wines is carried out regularly. Special attention is paid to the bacteriological examination of city water. The laboratory service for registered physicians is free of charge (including the Wassermann test). The amount of work done in the laboratory keeps two workers constantly busy.

Conclusion. This little paper is intended to describe the New Department of Health, Port of Shanghai & Woosung, very briefly and to summarize its present health activities. In the appendix are found four sets of regulations namely Regulations of the Department of Health, Board of Health, Western Trained Physicians and Native Trained Chinese Physicians.

Regulations of Department of Health, Port of Shanghai & Woosung.

1. That anything concerning the health of the Port of Shanghai and Woosung be under the direction and supervision of the aforesaid Department, to be named Department of Health, Port of Shanghai and Woosung under the Directorate of the Port of Shanghai and Woosung and the unification of former various sanitary organizations be hereby effected under the control of the said Department.

2. That the districts under the control of the said Department are those under the Directorate of the Port of Shanghai and Woosung.

3. That the Department be divided into first, second and third divisions and the health laboratory.

4. That the first division takes charge of street-cleaning, night-soil removal and sanitary inspections.
5. That the second division takes charge of vital statistics, regulation of physicians, pharmacists and midwives and all the hygienic undertakings which do not belong to other divisions.

6. That the third division be responsible for epidemic prevention, food inspection, control of narcotics, free medical services to the poor, vaccination and treatment of infectious diseases.

7. That in addition to the three said divisions, a number of employees be appointed to take charge of correspondence, keeping, delivery and receiving of documents, treasury and business management.

8. That the laboratory of the Department of Health takes charge of examinations of food, drugs, water and milk etc.

9. That the head of the Department of Health, Port of Shanghai and Woosung, be the Commissioner and the Deputy Commissioner directed by the Directorate of Port of Shanghai and Woosung to carry out any undertaking in concern with health; the Commissioner of Police Department to act with the Health Commissioner.

10. That each division be headed by one Chief, by a number of assistants directed by the Commissioner and the Deputy Commissioner to do what is instructed.

11. That the laboratory be headed by a Chief directed by the Commissioner and the Deputy Commissioner to manage everything in connection with the laboratory and to appoint assistants for laboratory work.

12. That the Department of Health be hereby authorized to have sanitary police directed by the Commissioner, the Deputy Commissioner and the Division Chief to conduct health inspections.

13. That the divisions and laboratory be invested with the right to have assistants directed by the Chiefs to assist in the work.

14. That the Department of Health has the right to employ clerks to copy documents.

15. That the Department of Health in order to carry out the inspection, vaccination, examination, injection, epidemic prevention and licensing has the right to charge fees and the regulations concerning the fees will be stipulated elsewhere.

16. That the Department of Health with the intention of receiving constructive criticism and advice be authorized to organize a Board of Health for consultation with the Commissioner and the Deputy Commissioner of the said Department. The regulations for the Board of Health are to be formulated later.

17. That the Department of Health submit a monthly report to the Directorate of Port of Shanghai and Woosung for reference.

18. Amendments are to be made after the approval of the Authority.

19. That these regulations come into effect immediately after being proclaimed.

Regulations Regarding The Board of Health of The Department of Health, Port of Shanghai & Woosung.

1. The establishment of the Board of Health comes into effect in accordance with Article 16 of the regulations of Department of Health, Port of Shanghai and Woosung.
2. The members of the Board of Health are composed of six prominent men and six medical experts and are invited by the Directorate of the Port of Shanghai and Woosung to sit on the Board of Health. The term will be three years, but one third of the members will be changed by lot annually.

3. The positions held by the members of the Board of Health are honorary.

4. The members of the Board of Health elect a president to be Chairman.

5. The Commissioner, Deputy Commissioner or one officer appointed by the Department shall be present at all meetings of the Board of Health.

6. The Board of Health shall handle all matters concerned with the health of Port of Shanghai and Woosung. Proposals can be made to the Department by a majority of the members of the Board of Health.

7. Half the total of each class of members constitutes a quorum.

8. Business manager, clerk and documents keeper of the Board of Health are those already employed by the Department.

9. Amendment to the above can be made only after the proposal is moved, seconded, carried and petitioned.

10. The aforesaid Regulations come into effect beginning from the establishment of the Department of Health.

Regulations of the Health Department for the Registration of Western Trained Physicians for the practice of medicine.

1. The Board of the Examiners for the Examination of Western Trained Physicians for Practice of Medicine is composed of a number of noted physicians who after being elected by the Board of Health and approved by the Department are invested with authority to take charge of the examinations.

2. Number of examinations held. There will be two examinations each year. The first on the second Monday of the month April and the second on the second Monday of the month October.

3. Examination and registration fees. Examination fee will be ten dollars mex. Should the applicant fail in the first examination, no examination fee will be required if he or she take the second examination in the same year. Registration and certificate fees will be two dollars mex. to be paid at the time of receiving the certificate immediately after the passing of the examination.

4. Rules governing the taking of examination. One month before the date of examination, the applicant should apply to the Health Department for an application card, present credentials with plain indication of what he or she has done and what academic training has been received, send in a four inch recently taken photograph of the applicant together with the examination fees.

5. Subjects examined are ten in number namely: a, Anatomy, b, Physiology and physiological chemistry, c, Pathology and medical jurisprudence, d, Diagnosis, e, Obstetrics, f, Internal Medicine including psychiatry and diseases of children, g, Surgery including dermatology and venereal diseases, h, Eye, Ear, Nose and Throat Diseases, i, Hygiene and bacteriology, j, Materia Medica and Therapeutics. The examination shall be by written papers. Answers can be in Chinese, English, French, Japanese or German. The average marks for a pass are 70 per cent. If the applicant has passed the written examination, the passing of the oral test will be the final judgment.

6. Registration.
a) No examination written or oral is necessary for the graduates of the Government recognized Medical Schools or Universities in China or abroad. If the applicant presents his credential registrations is made.

b) No examination written or oral is necessary for those who have already received certificates for practice of medicine from the Ministry of Interior, Peking, provided that the applicant presents his credentials for registration.

c) Oral examination only is necessary for those who have been practising as medical practitioners within the Port of Shanghai and Woosung area for five successive years, and have reported themselves as in practice to the Health Department before November 30th in the fifteenth Year of the Republic of China, the report having been confirmed by the Health Department's investigation. No examination fee is charged and registration is granted if the oral examination is passed.

d) With the exceptions in a, b, c, both written and oral examination are required for registration.

Appendix: At the time of registration, the applicant himself should present his four inch photograph to the Health Department. Those who are registered according to rules a and b are granted Medical Doctors' Certificates and according to rules c and d are given Medical Practitioners' Certificates.

7. Annual Examination of certificates. Each year in the month of January the issued certificates should be subject to examination by the Health Department for Visa.

8. Report of change of address. The change of address of registered physicians should be reported to the Health Department within two weeks, otherwise a fine of two dollars Mex. will be imposed.

9. Physicians' obligation. Any outbreak of infectious diseases should be reported at once to the Health Department giving particulars of the nature of the infection. Deaths should be reported with diagnosis of the same and births should be reported by the physician in charge directly to the Health Department.

10. Privileges of the registered. Registered physicians are permitted to practice medicine within the Port of Shanghai and Woosung. Stool, urine, blood, sputum, secretions and pus can be sent to the laboratory of Health Department for examination free of charge. The result will be sent to the physician in charge at the earliest possible time.

11. Penalty. Unregistered persons will be sent to the Court by the Health Department for punishment if treatment by prescription or injection is given on a pecuniary basis.

12. Amendment to the above can be made only after the proposal is moved, seconded, carried and petitioned.

13. The aforesaid Regulations come into effect thirty days after proclamation.

Regulations of the Health Department concerned with native trained Chinese physician's examination, registration and practice of medicine.

1. The Board of the Examiners for Native Trained Chinese Physicians. That the Board is composed of a number of noted and experienced native trained Chinese physicians who after being elected by the Board of Health and approved by the Health Department, Port of Shanghai and Woosung, are invested with authority to take charge of examinations.
2. **Number of Examinations held.** There will be two examinations each year. The first one will be on the third Monday of the month April and the second one on the third Monday of the month October.

3. **Fees for examination and registration.** The examination fee is eight dollars mex. In case of failure in the first examination no further fee will be charged if a second examination is taken within the same year. Registration and certificate fees are charged two dollars mex; the sum to be paid at the time of receiving the certificate after passing the examinations.

4. **The Procedure of taking the Examination.** One month before the date of examination the applicant should ask the Health Department for an application card, present credentials with plain indication of what he or she has done and what training has been received, send in a four inch photograph recently taken together with the examination fees.

5. **Subjects examined:**

   1) *Nay* and *Nan Kings* two Chinese classic studies of medicine. The former consists of 9 volumes which treat of the etiology and therapeutics of disease and also of 9 volumes which discuss anatomy in detail. (It is thought that these medical books were written many thousand years ago by Huang-Te, but in fact they were not written so early. The latter consists of 81 chapters of theories on pulse.)

   2) Typhoid fever.

   3) Epidemic diseases.

   4) Plague (Malaria and Dysentery).

   5) Gynecology.

   6) Surgery.

   7) Diseases of Children.

   8) Diseases of Eye.

   9) Diseases of Throat.

   10) Traumatic Injuries.

   11) Medical Herbs.

   12) Ancient Prescriptions.

   Among the 12 Subjects, Surgery, Pediatrics, Ophthalmology, Pharyngotherapy and Traumatic Injuries are classed as Special Subjects and treated by Specialists. The Nay Nan Kings are required to be studied by specialists as also the medical herbs, formulae and special prescriptions. Those native trained Chinese physicians who call themselves Tai-Fong-Ma (a term indicating Special Subjects with exceptions of Pediatrics and Traumatic Injuries and their treatments) should take from Nos. 1 to 5 and 11 and 12 subjects. The average passing marks must be 70%. If the written examination is passed oral test will be the final judgment.

6. **Registration:**

   a) No examination written or oral is required for those who graduated from the Native Medical Schools which have been recognized by the Kiangsu Native Trained Chinese Physicians' Union. Application will be registered provided that the diploma be presented.

   b) No examination written or oral is necessary for those who have already received certificates for practice from the Ministry of Interior, Peking, provided that the applicant presents his credentials for registration.
c) Oral examination is required for those who have been practising as native trained Chinese physicians within the Port of Shanghai and Woosung for five successive years, have reported themselves to the Health Department before November 30th in the fifteenth year of The Republic of China and the report has been confirmed by the Health Department's investigation. No examination fee is charged and registration is granted if the oral test is passed.

d) With the exceptions in a, b, c, see rule 5.

Appendix: At the time of registration, the applicant himself should present his four inch photograph in bust to the Health Department. Those who are registered according to rules a and b are granted Native Trained Chinese Physicians' Certificates and according to rules c and d are given Native Trained Chinese Medical Practitioners' Certificates.

7. Examination of the issued certificates. Each year in the month of January the issued certificates should be subject to examination by the Health Department for Visa.

8. Report of removal. Change of residence of the registered physician should be reported to the Health Department within two weeks, otherwise a fine of two dollars will be imposed.

9. Physicians' obligation: Any outbreak of infectious diseases should be reported at once to the Health Department and the name of the disease should be mentioned. Death should be reported with diagnosis and birth should be reported by the physician in charge directly to the Health Department.

10. Privileges of the registered. The registered physician is permitted to practice within the Port of Shanghai and Woosung. Stool, urine, blood, sputum, secretion and pus can be sent to the Laboratory of the Health Department for examination free of charge. The result will be sent to the physician in charge as soon as possible.

11. Penalty. Those who have not been registered will be sent to the Court by the Health Department for punishment if he or she treats the patient with prescription or injection on pecuniary grounds.

12. Amendments to the above can be made only after the proposal is moved, seconded, carried, and petitioned.

13. The aforesaid regulations come into effect thirty days after proclamation.

EXTRA HEPATIC SURGICAL AMOEBIASIS.

HENRY W. S. WRIGHT, M.S. (Lond) F.R.C.S. (Eng).

Surgeons who, in the nature of things, have to deal with disease in a very objective manner, are sometimes prone to think of amoebiasis as a condition which is the cause of two important pathological entities, an ulcerative colitis and a hepatitis which may or may not go on to abscess formation, and this conception in the main corresponds with our clinical experience. However, any discussion of surgical amoebiasis is incomplete without some mention of certain other conditions which may be directly or indirectly caused by the Amoeba histolytica. For this reason a partial review of them is not altogether out of place.
Surgical Amobiasis.

One of the most frequent places where amoebic ulceration causes secondary effects is in the wall of the large bowel itself. As a rule the ulceration due to amoebae heals very completely and often scars of old ulceration cannot be seen on careful sigmoidoscopic examination, but if extensive secondary infection is present there may be massive ulceration and thickening of the bowel wall which will give rise to symptoms of obstruction. The bowel may be narrowed, by infiltration of the submucous coat, till the lumen is about the thickness of a lead pencil, and above and below the narrowest parts there is extensive ulceration. This extreme degree of thickening is not very common, but small areas of local inflammation are often seen in chronic dysentery. These are as a rule situated in the most dependent parts of the colon, and give rise to areas of local pain and tenderness. For instance, Runyan and Herrick have recently reported four cases of massive infiltration of the bowel wall involving the caecum and terminal ileum. The first two were tentatively regarded as a tumour of the kidney and carcinoma of the caecum respectively, the last two, as the result of increasing experience, were correctly diagnosed. All these tumours were excised and submitted to complete pathological examination, so the diagnosis was not in doubt. They quote Lasuier as having described a similar condition of the sigmoid.

Two years ago a male patient aged 28 was admitted to the hospital of Shantung Christian University complaining of pain and tenderness in the left lower quadrant of the abdomen. He had constipation and sometimes diarrhoea, but his symptoms were mainly obstructive, becoming subacute at gradually increasing intervals. Examination revealed a tumour about the size and shape of a sausage, situated above and parallel to Poupart's ligament. After repeated examination, amoebae were found in the stools, but emetine caused no improvement in his obstructive symptoms. X-Rays showed a narrowed lumen filling defects, but no diverticulitis, although the clinical picture resembled this disease.

On laparotomy we found that the lower sigmoid, from just below the middle down to its junction with the rectum, was rigid and thickened, the bowel was adherent to the bladder and parietal peritoneum. There was a good deal of perisigmoiditis, but no diverticuli could be seen. A colostomy was done in the hope that later, when the inflammation had subsided, a resection and end to end anastomosis over a tube would be possible. The patient unfortunately never replied to enquiries. This may be a case similar to Lasuier's.

In the last four years we have had three cases of extensive stricture of the rectum. In two of these stool examinations revealed amoebae, after repeated examination, but in the third they were returned negative after only one examination.
These strictures were from one to three inches long, and situated about one inch from the anal margin. The condition above the stricture could not be seen as a sigmoidoscope could not be passed through it, but below there was proctitis. In all of them the rectum was fixed by inflammatory reaction to the surrounding tissues, but there was no fistula formation. In the first two cases treatment by dilatation was first carried out, but the patients lived so far away that continuous treatment was impossible, so they chose to have an inguinal colostomy. In the third case, the treatment was the same but without preliminary dilatation.

The question of appendicitis in amoebic dysentery is one of great interest and also one upon which the careful reporting and pathological examination of cases as they occur in China ought to throw a great deal of light.

That lesions of the appendix, either ulcerative or suppurative, can be caused by the amoeba is quite certain, but the interesting question is: How often does it occur, and what is the correct treatment? Clarke, working in the Panama Canal Zone, found that, of 186 autopsies on patients dying of amoebic infection, 76 had amoebic ulcerative appendicitis and that 9.2% of these had either a perforation or abscess formation.

Runyan and Herrick, working in the same district, feel that they have learnt to recognise a definite type of chronic or subacute appendicitis. These cases, as well as having the ordinary symptoms of appendicitis, have a dysenteric history, usually one acute attack of dysentery, followed after an interval by symptoms of indigestion and alternating constipation and diarrhoea. In these cases, amoebae either motile or encysted, are found in the stools, but as a rule only after repeated examination. Ordinary medical treatment failed permanently to make the stools amoeba free, and so, after a period of ultraconservative treatment, they were led to remove the appendix in such cases. They only do so, however, after a course of routine treatment has failed to clear up the symptoms. Moreover they have come to the conclusion that these cases recover from the operation better if the appendix is first removed and then ten days later further medical treatment is instituted.

Perforation of an amoebic ulcer is an uncommon but well recognised entity. Peritonitis also occurs from infection through a needle track or the bursting of a liver abscess. Another type of peritonitis sometimes seen is due to slow pyogenic infection which comes through the thin but apparently intact base of an amoebic ulcer.

We have had one such case. The patient had a liver abscess which pointed beneath the skin of the anterior abdominal wall, in the
upper left quadrant. The abscess was opened, washed out and sewn up. Afterwards it was aspirated daily as long as pus formed. In the meantime full doses of emetine were given.

On the eighteenth day he began to have symptoms of mild peritonitis in the right lower quadrant and a diagnosis of appendicitis was made. At operation, a low grade peritonitis was seen, the lower ileum and caecum were covered with mucopurulent patches. The appendix was kinked and the caecum was bound down by adhesions, but it seemed that the appendix was not the cause of the trouble, but was only involved in the general process. Subsequent pathological examination confirmed this. Further search showed an ulcer about the size of a ten cent piece on the inner border of the caecum. Its base was thin, and the surrounding tissue was acutely inflamed. The ulcer was buried and the abdomen closed. The appendix showed no lesions due to amoeba and the pus only contained pyogenic organisms. The patient made a good recovery.

Scattered through the literature are many examples of this type of case which corresponds to the type of peritonitis seen after gastrostomy and extensive pelvic operations in old people.

Of localised peritonitis due to extension from a liver abscess we have had at least one very interesting example. The patient had no clear history of dysentery, but had noticed a lump in the epigastrium for five months. At the beginning of the disease he had had acute pain, fever and rigors. Soon after a lump appeared which slowly enlarged until, on admission, it reached down to within one inch of the umbilicus, and was about the size of a foetal head. Its long axis was just to the right of the middle line; it was dull to percussion and fluctuated. Above it was continuous with the liver dullness, but below there was a semicircular band of resonance. The patient’s right kidney was infected but the usual methods of differential diagnosis showed that the tumour had no connection with the kidney. In the medical ward the tumour was aspirated and a yellow fluid containing streptococci was drawn out. The case was transferred to the surgical side and a tentative diagnosis of an infected pancreatic cyst was made. Exploration under local anaesthesia, for the patient was very ill, showed a chronic abscess cavity with walls ¼ inch thick which were adherent to the anterior parietal peritoneum. From it was drawn more than a litre of a yellow fluid containing a substance which looked like milk curd. On examination, no hydrochloric acid, no gastric ferments were found, but bile and living motile amoebae were abundant. The sinus drained bile for some time but the patient left hospital before the wound was completely healed. The amoebae rapidly disappeared from the discharge after emetine therapy.
Secondary invasion of other structures by a liver abscess is relatively common. Extension through the diaphragm to the lung is well known to occur, and Cleland has reported a case of extension to the pericardium, in which the patient died of purulent pericarditis.

Dr. Heimburger of Tsinan has recently reported a case of amoebiasis cutis which was connected with a sinus running down to the liver. The patient came to hospital with a large fungating ulcer. Its edges were indurated, everted and raised above the surrounding skin. When the pus was wiped away, it was seen that the granulations were an unusually deep red colour and looked like old beef. In the discharge amoebae were abundant, and sections showed them in the capillaries of the surrounding tissue. The ulcer healed completely after a course of emetine. This kind of cutaneous infiltration sometimes occurs around caecostomy wounds when the operation has been done for irrigation of the colon in amoebic dysentery.

Besides these conditions, which are due to the direct extension of an amoebic process, or its mechanical effects, there is another group of cases which is in some ways much more interesting because their pathology is still obscure.

It has long been realised by those who have to deal with dysentery that the condition may be latent for long periods of time, only to recur when the general resistance of the body is lowered by some other external cause. Amoebic fever is described in most text-books of Tropical Medicine. It is a condition in which the patient has slight fever and leucocytosis, over a long period of time. These patients are easily fatigued and have all kinds of indigestion, which may be variously referred to the colon, stomach, duodenum or gall-bladder for a physical basis. On examination, amoebae or their cysts are found, either in the stools or in the duodenal contents, and they are benefited by a course of emetine.

The work of the Medical Research Council suggests a possible explanation of this condition. They have shown that amoebae in encysted forms are not killed by emetine and therefore the cysts may remain latent in the body for long periods of time.

Kofoid and others working in the University of California have shown that amoebae may be widely distributed in the body and are by no means limited to the colon. They have found both the motile and encysted forms in the duodenal contents after the administration of bile and salines and suggest that these come from the liver. In common with many other workers, they have found amoebae in the capillaries of the tissues around ulcers and liver abscesses, and their sections show that they can easily get into the blood stream, thus furnishing an explanation for some of the conditions to be reviewed later.
Kofoid and his co-workers have made an elaborate study of the nuclei of amoebae and the method of division. They claim that, by suitable staining methods, they can recognize amoebae in the bone marrow of a certain type of arthritis, and in the lymph glands in Hodgkin's disease. On these grounds emetine has been given to such cases with, it is claimed, some success. However, no criticism of this work is of any value unless it is made by one who is familiar with the histology of amoebae, and of the tissue cells respectively, and it is only fair to say that their work has been subjected to severe criticism by other people, notably Dobell.

However, laying aside such questions as the causation of arthritis and Hodgkin's disease, there has been accumulating within the last few years a considerable body of clinical evidence which goes to show that amoebae may get into the blood stream and cause metastatic deposits in organs far from their original place of entry.

During the last two years at least one case of nephritis and eleven cases of cystitis have been reported. These patients complain of strangury, frequency and pain on micturition. Sometimes they have hematuria. Amoebae are found in the urine, and all the cases respond to specific therapy. I have not been able to see full urological reports but the fact that some of them complain of pain in the loin, and that the kidney may be enlarged, suggests that the cystitis, like other forms of haematogenous renal infection, may be secondary to a nephritis or pyelitis. In this country we ought to be on the lookout for such cases.

As regards the other abdominal viscera, I have been able to find records of one case of a splenic abscess, and one case of a gall-bladder infection with amoebae, which are undoubtedly genuine. As regards the latter organ, routine examinations have been made on the gall-bladders of cases dying of amoebiasis and no characteristic lesions have been found, and it is fair to conclude that amoebic infection of the gall-bladder is extremely rare.

Besides haematogenous renal infections, metastatic abscesses may form in the lungs, the brain and in the subcutaneous tissues.

Most pulmonary abscesses due to the amoebae are, of course, secondary to the direct extension of a liver abscess, but occasionally they are found having no connection with the liver, and cases have been reported where at autopsy an abscess has been found both in the lung and in the liver, but between the two no direct connection could be traced. As might be expected, the process in the lung appears to start by consolidation, which subsequently breaks down in the centre and forms pus. Finally it establishes communication with a bronchus and then ensues a varying degree of secondary infection. Such an abscess may remain latent for years, and some of the cases are
diagnosed and treated as chronic pulmonary tuberculosis, the diagnosis only being made when amoebae are specially looked for.

Such a pulmonary abscess may also communicate with the pleura or may give rise to a serous pleurisy. Sometimes in the terminal stages a pyopneumothorax is found.

Yalousis, in a study of the X-Ray appearances of pulmonary amoebiasis, says that it may be distinguished by the density at the hilum and the appearance of bronchiectatic cavities in the lobules. In a recent review, Izar has emphasised the fact that the question of secondary infection is an important one, both from the point of view of diagnosis and treatment. He says that, if the sputum is mucopurulent and blood-stained or chocolate-coloured, but not foetid, the condition is mainly protozoal and will yield to emetine therapy alone. Moreover, at this stage, amoebae are easily found and consequently the diagnosis is easy. Later, as the sputum becomes more definitely purulent, bacteria will increase and amoebae diminish. For its cure surgical measures may be necessary but it will usually yield to emetine combined with an autogenous vaccine.

In the last stage the sputum becomes really foetid and greenish and there is gangrene of the lung, in which secondary infection is an important factor. Amoebae are seldom found except post mortem in the tissue around the cavity, and surgery is always imperative.

Brain abscesses are usually terminal conditions. Their symptoms are similar to those of pyogenic origin. Only very occasionally do such patients recover after evacuation and drainage combined with emetine treatment.

In Nigeria, multiple abscesses in the muscles and connective tissue are common. The pus from some of these contains amoebae, and such patients rapidly recover when the abscess has been drained and emetine exhibited.

Finally, it ought to be mentioned that there is a type of irido-cyclitis which, if not diagnosed and properly treated, goes on to total destruction of the eye. It occurs in patients the subject of chronic amoebic colitis and is supposed to be due to the toxins from the amoebae. Symptoms of cyclitis precede those of iritis, pain, at first supraorbital, is considerable; photophobia is slight or absent. If given in the early stage, emetine cures the condition.

Enough has been said to indicate that amoebic infection may cause very widespread changes in the human body. To emphasise this is the object of this paper which contains no original material. It is felt that, in this country where amoebic dysentery is so common, we ought to be on the look-out for these obscure cases.
THE DIAGNOSIS AND TREATMENT OF AMOEBIC HEPATITIS*

Dr. Wright has asked me at somewhat short notice to send some notes on Amoebic Hepatitis. Unfortunately I have no Chinese material to hand at the moment and indeed almost no Tropical literature of any sort available, so I must crave indulgence for a somewhat sketchy paper based mainly on some War material gathered in the Near East. The only excuse for these notes is as a possible introduction to discussion.

Diagnosis. The salient features of the disease are so well-known and apparently so distinctive that it would seem from a text-book description almost impossible to miss the diagnosis. Every time I discuss it with my students I think what a simple problem it presents; and yet all of us who are familiar with the condition must realise how many times we do miss it in actual experience. During a year's War work with a C.C.S. in the Near East, where it was not an uncommon condition, I do not remember a single case coming to my wards with Amoebic Hepatitis correctly diagnosed, and I was often oppressed with speculating on the number of cases that must have passed through my own hands to the Base Hospitals still incorrectly diagnosed.

The diagnostic criteria are familiar to you all, but it may be worth while to enumerate them briefly:

History.—A history of dysentery. The typical picture that comes to my mind is of a white man (it is much commoner in men than women) resident in the tropics or sub-tropics, with a history, also of liver irritation from alcohol and strong condiments.

Symptoms:—Two symptoms stand out:—Pain and Fever. The pain is often characteristic, situated in the liver region and often referred to the right shoulder. With the fever there may be chills and sweating.

Examination:—The two important features, as usually given, are:—An enlarged liver, and a leucocytosis. To these I should be inclined to add a third:—Lung signs, apart from a rupture through the diaphragm, are very commonly present; rales at the right base or just above the liver are very suggestive. The facies, sallow and "liverish"—for want of a better word—is often quite characteristic, and has more than once turned my thoughts from a diagnosis of tuberculosis to one of hepatitis; there is often a subicteric tinge to the skin, and occasionally a definite jaundice. Fever is rarely absent for long; it may be of the septic type or quite irregular.

*We print this as received without the name of the sub-author. Probably owing to the present disturbed conditions answers have not been received to two letters asking for the name of the writer.—Editor.
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Here then is what we may call the Hepatitis syndrome:—A history of dysentery, fever, characteristic pain, enlarged liver, leucocytosis, and lung signs. It just needs the finding of amoebae or cysts in the stools to clinch the diagnosis; and of course there are typical text-book cases where the diagnosis is never in doubt. Unfortunately for our peace of mind, however, no one of these criteria can be said to be constant, and any of them may be absent, indefinite or atypical in any one given case. A brief resume of a few cases may serve to illustrate some of the guises under which the disease can masquerade:

Case I. A young Private admitted as an "acute abdomen." He was lying doubled up in acute distress, sweating with pain which had come on acutely a few hours before and was situated in the right hypochondriac region. The right rectus was hard; there was high fever. The lungs were clear and there were no other physical signs, and no history of previous illness. I diagnosed "Acute Appendicitis" and sent at once for the surgeon who agreed that it seemed a fairly obvious case, and took the boy over for immediate operation. After their departure I found the Field Ambulance card which had come with the patient and which had somehow got mislaid in the excitement; there were only three or four words on it, but one of them was significant:—"Diarrhoea." I hurried over to the Surgical side with this new information and found the patient already in the anaesthetic tent being prepared for operation; he said that his bowels had been "on the free side" for some time, but he had put it down to the climate and had not thought anything of it; there was no difficulty in obtaining a specimen—just a loose brown movement—but in a few minutes the report came back that it was full of amoebae. Emetine acted like magic in this case, and all the symptoms rapidly cleared up.

This was presumably a case of acute amoebic hepatitis which we were fortunate enough to catch in the early stage, before the development of an abscess.

Case II. A Private admitted with the diagnosis of Pleurisy. He ran an irregular fever, up to 103; there were moist sounds at both bases, most marked on the right, where there was also dullness and a loud friction rub. The diagnosis of amoebic hepatitis occurred to me as a possibility but there was no history of dysentery, the stools were normal, and there was no appreciable enlargement of the liver. After he had been ten days in the C. C. S. he passed a trace of bloody mucus in a stool; this was submitted at once to the lab., and—on one occasion in many thousands of high-pressure examinations in which I remember them making a slip—returned as "No T. B. found!" However, another trace of mucus was passed a few days later, and on this occasion abundant amoebae were found. The patient was put on Emetine with immediate cessation of symptoms.

This was presumably hepatitis at a later stage than the first case, but perhaps before the formation of an actual abscess.

Case III. A Bombardier admitted as "Malaria," the diagnosis being changed shortly after admission to "Pneumonia." I saw this patient once only when I was Orderly Officer on night duty. He had then been in the C. C. S. for three weeks with "? Pneumonia of right lower lobe." The temp. had come down by crisis and had been down for eight days; he had been
marked for transfer to the Base Hospital on the following day. When I saw him he was in a state of collapse; he had just strength to tell me that he had been seized with violent abdominal pain shortly before; he was lying on his right side with knees drawn up; the right upper rectus was rigid; pulse and respirations were uncountable. I thought it was probably a Typhoid perforation; there had been an inconclusive Widal, and there was no Gastric fever history. The man was too far gone for operation to offer any hope, and he died shortly afterwards. Autopsy revealed a considerable quantity of odourless brownish-red fluid in the peritoneal cavity; the liver was enlarged, especially the right lobe, and was adherent to the diaphragm. There was an abscess cavity in the right lobe large enough to admit two fists; this had ruptured on to the anterior and upper surface of the liver. The right lung was adherent to the diaphragm; otherwise the lungs showed no marked change.

This patient had been under the care of an experienced and careful physician: he had been on the danger list and had been seen by several of our staff, but to none of us had the correct diagnosis suggested itself. One other case is perhaps worth quoting by the side of this one; he came under my care shortly afterwards, when the memory of this case was still vivid in my mind.

Case IV. A corporal, resident for some years in the Tropics, was admitted with the diagnosis of "Malaria and Pneumonia". Benign Tertian parasites had been found in his blood. I first saw this patient at the end of his supposed pneumonia, at which time he was complaining of pain over the liver and in the right shoulder; the lower border of the liver was nearly down to the umbilicus with the upper border of dullness in the third space. There was a definite swelling over the lower ribs in the mid axillary line; there was no cardiac displacement. Over the right lung behind there was dulness with diminished fremitus to the level of mid-scapula, at which point there was a small area over which bronchial breathing and moist sounds were audible. This patient had clear history of Amoebic dysentery, and amoebae had been present in the stools a few months previously; he still had diarrhoea but no amoebae could be found when I saw him.

Here then were all the factors of our syndrome present, a white man resident in the tropics with a history of amoebic dysentery, the typical pain distribution, pyrexia, leucocytosis, apparent enlargement of the liver and definite signs in the right lung.

I felt that the diagnosis was Liver abscess rather than Empyema—I had grave doubts about that preceding "pneumonia" after our last experience and advised an immediate aspiration. A first aspiration in the mid-axillary line failed to locate the pus, but a second attempt, a little further back, tapped the pleural cavity and yielded nearly two pints of thin greenish-yellow empyema pus with abundant pneumococci. A piece of rib was removed and drainage inserted; the patient made an excellent recovery.

If there is a Recording Angel who keeps a critical eye on the diagnosis of us poor physicians, I fancy that Amoebic Hepatitis must occur not infrequently on the debit side of some of our accounts; and I quote this case to show that sins of commission may figure there
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as well as sins of omission. Indeed, after one has missed it a few times and been brought to book, one is apt to get a Hepatitis complex and diagnose it all too frequently.

Besides the syndrome already mentioned, there are other factors which may assist us in arriving at a diagnosis. An X-Ray examination may be of great value, the fluoroscope showing, most usually, an elevated right diaphragm with a characteristic limitation of movement quite different from that seen in pathological conditions above the diaphragm. The right costo-phrenic angle is increased in acuteness, and in cases where the abscess is located near the surface of the liver a rounded elevation may be seen on the surface of the diaphragm. Abelheim reports a case in which an old abscess cavity was visible as a definite rounded shadow in the right lobe of the liver.

The value of a careful examination of the stools is obvious. Boyers, Kofoid and Swezy in an important article on Chronic Amoebiasis stress the need for a careful examination for cysts as well as for amoebae and for the use of salines and bile salts prior to the examination.

Injections of Emetine may be used as a therapeutic test, and if a suspected early case, without definite evidence of abscess, is not rapidly improved by Emetine, it is almost certainly not amoebic hepatitis.

Finally, if an abscess of the right lobe is suspected, resort should be had to aspiration both for diagnosis and treatment.

A complete differential diagnosis of Chronic Amoebiasis with Liver involvement is obviously impossible within the limits of a short paper. I remember Osler once remarking, in the course of a puzzling Ward round, that if we could only diagnose accurately all the effects of Syphilis and Lead we should know the whole of English Medicine. One might almost substitute "amoebae" for "lead" and say the same of medicine in North China. Chronic amoebiasis may crop up in almost any department of Medicine; the psycho-analyst may find that buried amoebae rather than buried complexes are at the bottom of some obscure psychosis, and even the dermatologist, as Dr. Heimburger has shown us, may find "amoebiasis cutis" on his list of diagnoses. In my War experience the commonest mistake in diagnosis was between Hepatitis and Chronic Malaria, especially of the subtertian type with irregular fever; the importance of a careful blood examination is obvious in this connection. We have few harder problems in the Orient than the diagnosis of cases which show a prolonged irregular fever and nothing much else; chronic amoebiasis must always be kept in mind as a possible diagnosis in these cases.
Surgical Amoebiasis.

Treatment. In the early stages of hepatitis the results of Emetine treatment are very good, and there are now many cases of reported cure by Emetine even in the later stage of definite abscess formation. Dr. G. G. Low writes that "in the borderland cases between hepatitis and hepatic abscess emetine should be pressed." Patzi concludes his account of a case cured with emetine by saying that in all cases of amoebic hepatic abscess, wherever situated, one ought to give a full course of emetine before thinking of operation. It is true that immediate surgical interference is not as urgently called for as in bacterial forms of suppuration, but if it is decided to give emetine in a case where there is fairly definite evidence of abscess formation, the progress should be watched carefully by X-Rays, and aspiration should not be long delayed in the absence of rapid signs of improvement. There are still upholders of more drastic surgical measures, but the general tendency is to substitute aspiration for the larger operation. There is little serious risk in this procedure if one remembers the golden rule of Cantlie and Manson, never to push the needle or trocar to a depth of more than 3½ inches.

Evans gives the indications for surgical interference as follows:

1. Swelling over the liver area.
2. Oedema with pitting.
3. Progressive enlargement of the liver, increasing pain and tenderness.
5. Polymorph leucocytosis. (There may be little or no leucocytosis in the chronic abscess).
6. A definite shadow with fluoroscopy.
7. When pus is actually found on exploratory puncture.

Most cases can be dealt with by simple aspiration combined with emetine. Fortunately 80% are single abscesses, occurring in the proportion of 5 to 1 in the right lobe of the liver.

References
There has been a great deal of debate from time to time regarding the value of transillumination as an aid in diagnosing sinus disease. There is no doubt but that the early advocates of this method overestimated its importance. As a matter of fact it is hard to find any innovation in medicine or surgery which has not been heralded as of the utmost value. Time and experience have taught us its limitations as well as the uses to which the transilluminator may be put.

Not infrequently it is just as important to find a clear sinus in a given case as a clouded one. In every large hospital many refer cases are sent to the special clinic in order to determine whether or not there may be disease within the sinus capable of producing refer pains elsewhere in the head, or foci for infections at a distance from the sinus. The finding of an apparently normal condition of the nasal passages and membranes together with clear sinuses as demonstrated by the transilluminator is sufficiently convincing so that further examinations are not necessary.

Since we have become convinced of the aid which a clear transillumination gives in the understanding of our cases as a whole, this method is used routinely for all patients. Not infrequently a case is found where light does not pass through any of the sinuses while there may or may not be evidence of sinus disease within the nose. In such cases another method of examination such as the X-ray must be utilized to assist in the diagnosis. Then again unequal illumination of the sinuses may give one the impression that either the sinus, the frontal for instance, is absent or filled with pus or thickened membrane. Our suspicions having been aroused by these findings, we have been able to direct our search for trouble with greater intelligence.

Very early in our routine examinations we discovered a high percentage of cases in which we were unable to pass light through frontal sinuses. The superciliary ridge is usually flat in the oriental and examination of the frontal sinus is not an easy matter. The transilluminator must be applied carefully underneath the small projecting edge of the frontal bone and pressed down firmly in order to be perfectly sure the light is not being transmitted through the skin. A number of investigators have stated that the prominence of the superciliary ridge gives no indication of the extent of the frontal.
of importance have been made on oriental skulls so that it can not be said that what is true of the occidental also holds good in respect to the oriental.

In a fair number of our early cases which had either absent frontals or blocked frontals as indicated by our inability to pass light through, X-ray examinations were made and not infrequently reports came back that frontals were occluded or absent. These findings together with the examination of a limited number of autopsy specimens and dissected skulls in which the frontal sinus was either small or absent in a high percentage of the cases, has led us to conclude that frontals are more often absent in the oriental than in the occidental. It should be clearly understood that this is merely a general impression gained from clinical evidences and no accurate statement can be made until further study on oriental skulls proves or disproves these findings.

It is a singular fact that frontal sinus disease in China is extremely rare, if one may make such a judgment from the fact that hospital data from various centers where radical nose work is done show practically no frontal operations excepting on foreigners. The frequency with which one meets ethmoiditis and inflammation of the antrum would make one conclude that other things being equal the frontal, if it existed to the extent that it does in the occidental, should be more frequently involved.

Transillumination of the antra in the oriental gives practically the same results as with the occidental. However, occasionally the pigment of the skin is so deep that clear transilluminations by inserting the bulb under the hard palate have not been obtained. Again with certain patients where the pigment has not been deep the thickness of the hard palate apparently has blocked effectively the light rays in cases where we were morally certain there was no disease of the antrum. We have come, therefore, to use what is called the Coolidge method in the examination of the antrum in practically all of our cases. In this method the small electric light bulb is inserted outside the alveolar process and up underneath the thinnest part of the antrum. In the majority of cases this gives satisfactory results. The light passing through the antrum gives not only the light reflection in the eye but light is carried up into the inner canthus of the eye.

One gets the impression from this routine examination of the antrum that it is usually fairly large in the oriental. This impression is borne out by the finding of large maxillary sinuses at the time of radical operations and in the few specimens which we have at our disposal. Incidentally there are an unusual number of antral cases constantly in the clinic which have to be washed out and occasionally operated.
The transilluminator provides a means whereby the convalescence of an acute or chronic sinus may be studied. The acute processes invariably block all light especially when the bulb is placed underneath the hard palate. As the process begins to clear the first evidence of its clearing may be shown by a small amount of light coming through the upper part of the sinus when the transilluminator is placed in the Coolidge position. The light placed in this position passes through the sinus more and more clearly as the condition improves until finally the bulb may be placed underneath the hard palate and complete illumination of the sinus obtained.

Finally the use of the transilluminator as a routine aid to the diagnosis of nasal accessory sinus disease has been found to be of real assistance. A certain amount of general information has been obtained regarding the presence and absence of the frontal sinus, a distinct impression being made that the frontal is absent in perhaps half the cases examined. This is a matter which we realize should have more study. The Coolidge method has proved of great value not only in the routine examination of all antra but in determining whether or not diseased sinuses are responding to intranasal treatment.

TWO YEARS OF OBSTETRICS IN A MISSION HOSPITAL

Doris Hoffman, M. D. and Vera Hsiung, M. D., Dept. of Obstetrics.
Margaret Williamson Hospital, Shanghai.

A statistical analysis of the cases of labor treated during two years in an active obstetrical service in Shanghai may be of interest.

This analysis was compiled from a card catalogue in which data are noted at the time of the patient’s discharge from the hospital, therefore there is a slight discrepancy between actual deliveries during the year and those included in the report, as some patients are discharged in January who were delivered in December the previous year. Thus, during 1926 there were 1126 deliveries noted in the delivery room record, while data are obtainable on only 1064. The largest number of deliveries in any one month during the two years was in January, 1926 during which month there were 128 deliveries.

The incidence of the various presentations and positions in the series for 1925 and 1926 was as follows:

<table>
<thead>
<tr>
<th>Position</th>
<th>1925</th>
<th>1926</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOA</td>
<td>627</td>
<td>571</td>
</tr>
<tr>
<td>ROA</td>
<td>191</td>
<td>227</td>
</tr>
<tr>
<td>ROP</td>
<td>56</td>
<td>81</td>
</tr>
<tr>
<td>LOP</td>
<td>32</td>
<td>22</td>
</tr>
</tbody>
</table>
Clinical Notes.

<table>
<thead>
<tr>
<th>Position</th>
<th>1925</th>
<th>1926</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertex, unclassified</td>
<td>12</td>
<td>21</td>
</tr>
<tr>
<td>Breech</td>
<td>52</td>
<td>64</td>
</tr>
<tr>
<td>Transverse</td>
<td>33</td>
<td>71</td>
</tr>
<tr>
<td>Face</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Brow</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Total deliveries</td>
<td>1018</td>
<td>1064</td>
</tr>
<tr>
<td>Twin deliveries</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>Abortions (delivered earlier than 7 months)</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>

Obstetrical complications encountered were as follows:

<table>
<thead>
<tr>
<th>Complication</th>
<th>1925</th>
<th>1926</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxemia of pregnancy</td>
<td>30</td>
<td>11</td>
</tr>
<tr>
<td>Nephritis</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Eclampsia</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>Placenta Praevia</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>Abruptio Placentae</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Prolapse of cord</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Hydramnios</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Abdominal Pregnancy</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Ruptured Uterus</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Puerperal infection</td>
<td></td>
<td>51</td>
</tr>
</tbody>
</table>

In all cases of ruptured uterus the patient had been attended by midwives and the uterus was ruptured before admission.

The most serious complications met with, except ruptured uterus, which is comparatively rare, are eclampsia and placenta praevia. A brief consideration of the course and results in these cases may be of interest.

Of the 21 cases of Eclampsia in 1926, three had only post-partum convulsions. These were all mild cases, two having three convulsions, and one having only one. It is interesting to note that in the latter case pituitrin was given just after delivery, to a patient having a systolic pressure of 180, and this may have precipitated the convulsion. Three cases had both ante-partum and post-partum convulsions. In the other cases there were no convulsions post-partum. The largest number of convulsions recorded is seventeen, though in some cases the only history obtained was that there had been "many" convulsions. The maternal mortality was six. In one of these cases, there was good recovery from the eclampsia, following Caesarean section, but death occurred on the 60th day from staphylococcus septicemia. Caesarean section was performed in six cases. Of these, three patients died, never recovering from coma after the operation. In all these cases the patient was admitted in a very serious condition.
A fourth case was the one mentioned above, in which death occurred from septicemia. In this case there had been 17 convulsions before operation. Five cases were delivered by forceps, three by version and extraction, one by breech extraction, and five were normal deliveries. There were eight still births, three neo-natal deaths (one of these on the 45th day, but while still in hospital) eight were discharged in good or fair condition, and one developed cerebro-spinal meningitis, and was discharged against advice, though improving. It is difficult to draw any definite rules as to treatment from the study of these cases, but in general, unless there is full dilatation, conservative measures, of sedatives, rest, and elimination, are first used and if there is no improvement within a reasonable time, delivery is effected by Caesarean section, or any method which is convenient.

Of the 26 cases of placenta praevia in 1926, there were three maternal deaths from hemorrhage, twelve still-births, and four neo-natal deaths. All the fatal cases were practically exsanguinated on admission. In addition to these however, there was a death from hemorrhage in a waiting patient in the hospital. It had been thought safe to allow her to wait until term for delivery, but there was a profuse hemorrhage which proved fatal before delivery or other measures could be effected.

The following obstetrical operations were performed:

<table>
<thead>
<tr>
<th>Operation of forceps*</th>
<th>1925</th>
<th>1926</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>19</td>
<td>8</td>
</tr>
<tr>
<td>Mid</td>
<td>22</td>
<td>49</td>
</tr>
<tr>
<td>Low</td>
<td>13</td>
<td>13</td>
</tr>
</tbody>
</table>

of these, the indication was posterior position of the head in 14 cases in 1925, and in 30 cases in 1926.

<table>
<thead>
<tr>
<th>Version and extraction</th>
<th>1925</th>
<th>1926</th>
</tr>
</thead>
</table>

of these, the indication was transverse presentation of the fetus in 38 cases in 1925, and in 66 cases in 1926. In one presentation, the patient had been attended for many hours of labor by a native midwife, and was admitted with a fetal arm prolapsed from the vulva. The fetus in most cases was dead. Of the other indications for version and extraction, the most frequent was posterior position of the head, with non-engagement.

*The terminology employed here is as follows:
  High forceps—Head above level of the spines.
  Mid forceps—Head at level of the spines.
  Low forceps—Head on perineum.
Clinical Notes.

<table>
<thead>
<tr>
<th></th>
<th>1925</th>
<th>1926</th>
</tr>
</thead>
<tbody>
<tr>
<td>Craniotomy</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Decapitation</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Embryotomy</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Caesarean section</td>
<td>7</td>
<td>11</td>
</tr>
</tbody>
</table>

The Caesarean sections for 1926 include one laparotomy for abdominal pregnancy, eclampsia, 6; toxemia of pregnancy, 1; contracted pelvis, 1; placenta praevia, 1; stenosis of vagina, 1.

Breech extractions have not been included in the operative cases as it is difficult to separate the normal from operative deliveries.

Of all the deliveries for 1925, 203 are reported as having been attended by midwives before coming to the hospital, and in 1926, 203.

There were 26 maternal deaths in 1925, 29 in 1926. In addition, a number of patients were discharged against advice, in serious condition. The causes of death, in the cases in 1926, were as follows: Placenta praevia (death from hemorrhage), 4, (one undelivered); acute cardiac dilatation, 1; pre-eclamptic toxemia (after Caesarean section) 1; toxemia, after version and extraction, 1; pulmonary tuberculosis, 1; peritonitis caused by abdominal pregnancy 1; staphylococcus septicemia (post Caesarean) 1; acute yellow atrophy of the liver, 1; abruptio placentae, 1; pelvic peritonitis, 1; Pneumonia 1; Broncho-pneumonia 1, Acute dysentery (type unknown) 2; Eclampsia (1 died after caesarean section, 1 died after delivery by low forceps) 2; Acute cardiac dilatation 1; Pulmonary edema 2; Ruptured uterus 3; undiagnosed 3;

The rarity of fatal cases of puerperal sepsis will be noted. Although a few cases were removed from hospital against advice, in serious condition, on the whole there seems to be great resistance to puerperal infection among Chinese women.

In general the chief difference noted between the material in this service and in a similar obstetrical service in America, for example, is found in the greater number of neglected cases of eclampsia, placenta praevia, transverse presentation, and posterior vertex presentation, and in the greater resistance to puerperal infection found in Chinese women.
NOTES OF TWO CASES IN WHICH NOVASUROL WAS USED.

D. LANDSBOROUGH, M.B., C.M., SHOKA, FORMOSA.

FIRST CASE

Sia-Mo, male Chinese, aged 46. Admitted to hospital on 22 January 1927 and discharged improved on 21 February, 1927.

*Disease.* Ascites due to cirrhosis of the liver. Anemic; Ascaris and Trichocephalus eggs in the stools. No ankylostome eggs found. No anasarca.

*Treatment.* Tinct. of Digitalis, Potass. acetate, Diuretin, also saline purgatives. In addition he had 5 intravenous injections of Novasurol 1.2cc. The abdomen was also tapped twice. The Novasurol never failed to produce a strong diuretic effect noticed by the patient. He left the hospital very considerably improved.

SECOND CASE

Tiu-ho-moa, Chinese male aged 55. Admitted to hospital on 2 March, 1927 and discharged much improved on 19 March, 1927.

*Disease.* Dilated heart with mitral murmur. Very marked anasarca and anemia. Stools contained ankylostome eggs. The anemia may have been due to ankylostomiasis. Urine free from albumen.

*Treatment.* Tincture Digitalis, Potass. acetate, Diuretin, saline purgatives. The ankylostomiasis was treated with Carbon Tetrachloride. In addition to the above he was given 4 intravenous injections of Novasurol, all of which had a marked diuretic action.

*Result.* The anasarca disappeared, and the patient's general condition greatly improved.

*Remarks.* I think we may say with confidence that in both these two cases marked benefit arose from the intravenous injection of Novasurol, but as other remedies were used as well it is difficult to say how much of the benefit derived was due to the Novasurol.

One thing is certain viz: that in both these cases as well as in all others in which I have tried Novasurol, a marked diuretic effect was produced by its use. In one case the daily output of urine increased from 450 cc. to 900 cc. The drug is therefore of much use where a strong diuretic action is called for and especially in cases where other diuretics have failed. It is perhaps specially useful in cirrhosis of the liver with ascites, as in the first of these two cases recorded here, because in such cases ordinary diuretics often fail.
Clinical Notes.

HYDATID DISEASE.

The following notes reached us in a letter from the late Dr. G. E. King of Lanchowfu, Kansuh. In view of the apparent rarity of Echinococcus infection in China they are of considerable value. It is an interesting question whether hydatid disease is really uncommon over the greater part of China, or whether cases escape notice or diagnosis.

We have operated on five cases of hydatid disease, and seen two other cases in which we were practically certain of the diagnosis, but where operation was refused.

Case I. Tibetan man, aged 25, gradual increase in size of swelling in liver region for 5 years. Considerable emaciation. On operation large cyst was incised, part of the wall removed. Healed well.

Case II. Chinese woman from neighbourhood of Lanchow, aged 23, swelling in liver region increasing for 3 years, very large. Patient very emaciated. On operation a large cyst, as large as a full time uterus was tapped, injected with formalin, evacuated, part of wall removed. Healed very slowly, but after 10 months sinus had closed, and patient was in excellent health.

Case III. Chinese boy, aged 12, from neighbourhood of Lanchow, a sheep grazing district to the north of the City. Growth of some years. On operation practically the whole cyst was removed, as it was largely separated from the main part of the liver. Cured.

Case IV. Tibetan woman, aged 30, swelling in Scarpa's triangle, 4 years. No evidence of T. B. hip or spine, swelling is soft, lobulated, No fluctuation definitely obtained. Diagnosis (provisional) of Lipoma or perhaps T. B. abscess. On operation definite hydatid cyst, ectocyst and endocyst typical. Tumour about size of a fist. Cured.

Case V. Another Chinese woman, of about 35. I have not details of her case.

PARAGONIMIASIS AND ITS TREATMENT

S. H. Martin, M.D., C.M., Lungehingsun, Manchuria.

Although this disease is endemic in Korea, it is rarely seen in Manchuria. In Korea it is almost always seen in cases in which the lung tissues alone are involved. In Korea the infection is conveyed from the water or by eating two species of crayfish found in different localities. It is not often that a general infection by this fluke is met with, hence the following report. The patient referred to is one of many thousands who have emigrated from Korea. He has been seventeen years in China without getting any treatment for the disease.
We wished to operate on this case to get a section from the liver and intestines but the patient insisted on leaving when he was well enough to stand the operation.

The patient, a brass merchant, was admitted to Hospital on 22nd November, 1926.

He complained chiefly of spitting blood and passing blood in his stools. Duration of these symptoms three years.

His parents died when he was an infant. He has been married twice, has no children nor abortions.

The patient was born in Chinju, Korea, lived there for 14 years, and then lived at Pyeng Yang for 3 years, after which he came to Totagou, (China), a town 40 li from this City. There is nothing of note in his habits and occupation.

About three years ago he had an attack of vomiting and diarrhoea for a week. Since that time he has suffered from general malaise, with slight chills and fever. He has had a cough for the last 20 years. Since leaving Chinju and for the last one and a half years it has been more marked, with blood in the sputum and blood in the stools. For the last three years he has had a "pulling" pain in the abdomen. Bowels moved twice daily. Appetite and digestion good.

There has always been a "pulling" pain in the left chest. He is greatly distressed with gas in his abdomen at intervals and also a dragging pain in the lower abdomen on passing urine. In his past history he has had Typhoid Fever and Malaria, also Gonorrhea for one month seven years ago.

**Physical Examination**

Shows a small man, 104 lbs, aged 44, with muddy complexion. Stoops when walking. Poorly nourished. Lies on his back with definite abdominal type of breathing. His skin is slightly yellow with acne in parts of his face. The left eye shows the results of old iritis. Eye grounds are normal. Several teeth missing, pyorrhea and redness of gums.

Inguinal lymph glands hard and shotty. Chest expansion limited on right side. No movement noted of diaphragm on the right side, (Litten's sign). Auscultation negative except for a few rales at hilum of the lung on both sides. The abdomen was markedly scaphoid. The liver was enlarged three fingers and nodules felt on the same below the costal margin. Blood pressure was \( \frac{120}{90} \). The circulatory system was otherwise negative. The blood showed on first examination 20% esinophiles, 13,000 leucocytes and 4,200,000 red cells, Hemoglobin 60%. The spleen was not felt.
X Ray showed marked shadows in position of the hilum of both lungs. Apices lighted up well. The diaphragm on the right side was almost immobile, otherwise the lungs were clear. The temperature was normal except when getting mercurochrome.

The abdomen on palpation reminded one of a chronic tubercular peritonitis. The omentum was thickened and a peculiar feeling was present as of separating coils of intestine that had been glued together.

The patient had several attacks of diarrhoea with blood in the stools and pain on pressure over the abdomen.

The sputum, consisted of dark thick mucus stained with blood, containing at first as many as 100 eggs in one low power field.

The feces showed ascaris, trichuris and many distoma eggs.

The urine was acid, 1012, and contained one to four distoma eggs. No sugar. No albumen.

**TREATMENT**

Following Dr. Tootell's article on the treatment of Schistosomiasis Japonica with Tartar Emetic and Mercurochrome, the patient was given Tartar emetic in a 2% solution starting with 0.5 cc. until he was getting 5 cc. intravenously. There were no untoward symptoms except increased diarrhoea with the large doses. The number of eggs in the sputum showed no marked decrease on daily examination, and still showed in the stool.

**PROGRESS**

On December 3rd at noon mercurochrome 15 cc. was given intravenously. There was a rise of temperature three hours later to 103 F.

Dec. 4th. Eggs in sputum and feces greatly reduced, many appear broken.

Dec. 6th. No eggs in stool and urine.

Dec. 7th. Mercurochrome 16cc. at noon. Chill and temperature 103.5

Dec. 8th. Eggs in sputum, none in feces and urine.

Dec. 10th. Mercurochrome 17 cc. at noon.

Dec. 11th. Eggs in sputum only.

Dec. 12th. Patient complained of pain in the teeth, and a boggy and red condition of the gums showed mercury poisoning. He was unable to continue with the mercurochrome. The sputum now showed numerous R. B. C. and 5-10 eggs per low power field.
Dec. 13th. Emetine treatment was started using $\frac{1}{2}$ gr. Burroughs Wellcome Emetine intravenously daily. After six treatments the patient was free of eggs and blood in the sputum.

Dec. 20th. X-Ray still shows infiltration about the root of the lungs. The patient feels generally much better both mentally and physically. Blood count is practically normal.

Parallel with this case we treated a student of 20 years of age, with lung infection only. We gave him heavier doses of Tartar emetic until he was getting 6cc. in a dose, but eggs still persisted. We then changed to emetine but still eggs were shown. We then gave him two injections of mercurochrome at 3 days interval and followed with emetine 1 gr. doses. The eggs disappeared from the sputum in four treatments.

**SUMMARY.**

Infection by the Paragonimus Westermani appears to cause infiltration in the lung connective tissue, and bronchial glands. In the abdomen it produces definite adhesions. In the liver cirrhotic changes and possibly abscess formation. In this case there were adhesions between the liver and diaphragm.

**TREATMENT.**

One of our cases required seventy injections of emetine to produce a cure.

The two cases here reported had their length of treatment greatly reduced by the initial use of mercurochrome. Tartar emetic as used in the two cases reported does not seem as effective as when used in cases of S. Japonica.

**REFERENCES.**

1. Paragonimus Westermani, a crayfish as one of the intermediate hosts. H. Kobayashi. C. M. J. 1919. Page 564.


The I.H.T. alas, is not immune to the maladies of the age! Hospitals have closed, and travel conditions have become impossible throughout the country. The I.H.T. itself has had to close and its students have been scattered, as St. James Hospital, Anking, where it was so graciously permitted to establish itself is temporarily out of commission. In all the circumstances it was thought advisable that the secretary should take the opportunity of a furlough till things mend. There seemed nothing else to do and he has already left.

But the I.H.T. is far from dead. Its thoughts are in the future, and it has faith that in the good Providence of God it has history yet to make in the service of reconstruction that lies before us all.

In the meantime every effort will be made to maintain its section in the "Journal" unimpaired, and to continue its Inquiry Service as hitherto. There will be delays; but inquiries directed to the I.H.T., c/o the Editor of the C.M.J. will receive full attention. As ever, suggestions will be welcomed. The problems before us are new. They will crop up first of all to those who are individually trying to make headway amongst the difficulties of the time. The I.H.T. will welcome notes of experiments. Be they failures or successes they will be instructive to all others who are wrestling with like problems,—and these include us all.

A FEW PRACTICAL SUGGESTIONS FOR HOSPITAL PHARMACIES IN CHINA.

JOHN CAMERON, Ph.C. F.C.S.
Member of the Pharmaceutical Society of Great Britain.
Pharmacist—Peking Union Medical College

During the past six years it has been our privilege to supervise the department of pharmacy in the P.U.M.C. and we have learned much ourselves during these years about the many difficulties which have to be faced and overcome in the practice of the science of pharmacy in China. It occurred to us that some practical suggestions gained from our own experience here might be helpful to pharmacists
and dispensers in other hospitals in China. We realise that it may be very difficult—and in some cases absolutely impossible to duplicate our methods here—but there is just the chance that some of the suggestions we have to make may be of some value to other hospitals. We would suggest to Hospital Superintendents or those responsible for the efficient running of the hospital pharmacies in China that some of our methods should be tried—if found unsuitable or unworkable owing to local conditions they can easily be discarded.

**Purchasing Supplies:**

The pharmacy budget is a source of constant trouble and worry in most of the Hospitals in China. In many cases annual supplies cannot be purchased for lack of funds and the authorities are forced to purchase their requirements monthly or bimonthly in some local market or in Shanghai. It should be borne in mind that this is the most expensive method of purchasing drug supplies. In every case it would be at least 25 per cent cheaper if the whole annual order could be sent at one time to one wholesale chemical firm. We will not presume to make any definite suggestions as to whom the order should be sent. There are some reliable wholesale houses in Shanghai who can supply all kinds of pharmaceutical requirements. There are many well known houses in Britain, America and Germany who are continually shipping chemical and drug orders to China. We would suggest that in hospitals where small amounts of drugs are being purchased monthly or bimonthly—they endeavour to place a yearly order with a reliable firm and note the difference in the actual laid down prices of the various items purchased when compared with the previous prices for the smaller quantities.

**Sera and Vaccine:**

One of the difficult problems of all pharmacies in China is where to purchase sera and vaccine, how to store it and how to keep the stocks up to date. With the establishment of the National Epidemic Prevention Bureau in Peking at the Temple of Heaven a great deal of the difficulty which formerly attended the purchasing of Sera and Vaccine has disappeared. We have recently had the privilege and pleasure of inspecting this whole plant and we recommend this source of supply to hospitals in China with confidence. Attached to the Bureau there is a well organized and properly equipped business office which handles mail orders in the minimum of time. Unfortunately this Bureau does not prepare all kinds of sera—there are some sera which must be purchased from reliable firms in Shanghai. It should be noted, however, that most of the foreign drug agencies in Shanghai which supply sera are always pleased to replace time-expired sera with
the fresh material. The usual rule is to return the sera which is about
to become time-expired one month before the actual date of expiry
and these firms will replace the sera without any extra cost.

Storage:

During the hot summer months sera and vaccine should be stored
in an ice-chest—there is no other method available for keeping the sera
and vaccine fresh. In the winter months, if possible, they should be
stored outside in a locked cupboard or the ice chest could be lifted
outside and left there.

When ordering sera from wholesale Drug houses it should be
noted that unless sera without syringe attached is specified often sera
in a neatly packed syringe packet is supplied and this increases the
cost considerably.

Pharmacy Containers:

There is no necessity to purchase expensive "shop-rounds"—to
use the usual term applied to the bottles which carry the dispensing
stock solutions and powders in the pharmacy. In Peking—the Kuang
Ming Glass factory make very efficient white, amber and blue coloured
glass bottles which are admirable for daily dispensing use in the phar­
macy. These bottles are very cheap and easily replaced when broken.
In pharmacies situated in the interior of China we would suggest that
the original one pound or one pint bottles supplied with the orders
from wholesale houses make ideal dispensing bottles.

Pharmacy Container Labels:

As labels in this country have a nasty habit of becoming detach­
éd from the container, due no doubt to the dryness of the summer
months, we would suggest that the names of the chemicals and drugs
be painted on the bottles and then varnished. This obviates any poss­
ibility of losing the label and forgetting what the bottle contained.
We have seen some very neat pharmacies where all the bottles and jars
had artistically painted labels—the labels on each of the bottles having
been painted by the pharmacist himself. If the precaution to varnish
the finished label is taken it is then possible to wash the bottle without
in any way damaging the label.

Dispensing Labels:

A very economical method of preparing labels—Chinese or English
is to have rubber stamps made with the required directions on them.
A large piece of white paper can be stamped with the required rubber
stamp then cut into separate labels. We use this method here for all
our outpatient Chinese labels and have found it very economical.
Printed labels can be had from Chinese printing houses at about $0.75 per thousand. These should be supplied ungummed because during the hot weather we have found that ordinary gummed labels have a habit of sticking together. Some cheap and easily prepared dextrine gum should be made in the pharmacy for use as labels are required.

Small Chip Boxes:

Small cardboard boxes, square or round, are used by pharmacies for supplying tablets, pills, ointments or solid chemicals. These should be purchased locally. If a sample of the style of box required can be had we feel sure that in any town in China there will be some Chinese who will duplicate the box at a very small cost when compared with the price paid for imported chip boxes. Sputum boxes can also be made locally and stool boxes of any desired size.

Weights and Measures:

We have had experience of both systems—the Imperial and the Metric. In our opinion the advantages to be gained by the adoption and use of the Metric far outweigh anything that can be said in favour of the Imperial. Take for example the preparation of a simple percentage solution—no calculation is necessary at all in the Metric system; where very accurate solutions are desired never trust a dispensing bottle to hold an exact amount. Always measure the amount of water or whatever the solvent may be in a graduate and when the solution is complete then transfer to the dispensing bottle.

Stock Solutions:

Concentrated solutions of chemicals in daily use should always be ready in a pharmacy. Take as an example potassium iodide—a chemical which is probably in daily use in every hospital in China. It is a great saving of time to have a fifty per cent solution of this chemical always at hand on the dispensing counter. If the doctor prescribes 6 grammes then 12 c.c. are measured out—it is much quicker to measure a solution than to weigh a solid. Stock mixtures can also be prepared in a concentrated form so that say 20 or 30 c.c. when added to 160 or 150 c.c. of water will give the desired mixture. The advantage of carrying concentrated mixtures will be obvious—a smaller bottle can be used for carrying a bigger stock.

Stock Ointments:

In a like manner concentrated stock ointments may be prepared—then only one ointment jar need be used instead of ten. Take sulphur ointment as an example of this, a twenty to twenty five per cent sulphur ointment can be prepared and from this any lesser strength
ointment is quickly prepared by adding the necessary vaseline and rubbing up the concentrated ointment with the base on an ointment slab.

Stock Pills or Tablets:

It is advisable to carry fairly large stocks of either pills or tablets. All pills should, of course, be made in the pharmacy. If a tablet machine is available—no tablets should be purchased in the wholesale pharmaceutical houses. In pill making sometimes difficulties arise as to the proper excipient to be used—some reference work should be consulted—we would suggest the British Pharmaceutical Codex for two reasons. One, because it gives clear and easily understood information about chemicals and drugs in common every day use in the pharmacy; and two, because it also contains a detailed list of hundreds of stock mixtures with methods of preparation. It is an ideal reference book for any pharmacy and if possible the various stock mixtures for general use in the hospital might easily be taken from the many examples listed. Where there is no tablet machine—it is cheaper to supply powders although these take a much longer time to weigh out and wrap.

Empty Capsules: (Gelatine)

This is a very convenient method of prescribing drugs and it is becoming very common in China now. These capsules are made in two colours—one red, the other white. If hundreds or thousands of capsules are used by the hospital it is a laborious business to have to weigh out say five hundred lots of the drug required on papers and then transfer the drug to the capsules—one at a time. We would suggest that a small wooden frame be made to hold exactly 50 or 100 empty capsules. These can all be filled at one time with the particular drug or chemical required—one capsule should be weighed to check the amount of drug it contains. It sometimes happens that when a light drug is being put into capsules the drug requires to be compressed into the capsules—this is easily accomplished by having a specially made lid with say 50 or 100 short wooden pegs which exactly fit the inside of the capsules. By gentle pressure the drug may be compressed and more added to each capsule until the desired weight is obtained.

Glass Ampoules:

Empty glass ampoules are or could be used in some of the Hospitals in China. These can be purchased from Messrs. Allen & Hanbury Shanghai. This is a very convenient method of carrying small quantities of sterile solutions in Stock. Great care and scrupulous cleanliness are essential in the filling of these ampoules.

(To be continued)
THE HOSPITALS

As noted in the April issue of the Journal, the Secretary has been busy trying to get information of the present position of the hospitals in the different provinces of China. While the information so far received covers a considerable part of the country, it is still incomplete and we should be very glad of any further details from those with knowledge of the local situation.

This issue of the Journal contains, under the Section devoted to C. M. A. news, papers of considerable interest on the position of the hospitals.

1. There is a general review of the position of the hospitals in the provinces under Southern control so far as it could be ascertained up to the end of May. Reprints of this can be obtained from the offices of the Association and copies will be sent as far as possible to the Missionary Bodies interested in medical mission work in these provinces for their information.

2. An interesting review of the present position of the Hodge Hospital in Hankow also finds a place in this issue.

3. A brief report of the hospital arrangements at Kashing is given.

We feel strongly that these next few months offer a great opportunity for studying the way in which the problems of hospital management have been met with regard to the future of mission hospitals in China. At the same time it must be insisted on that any judgement come to in individual cases must be arrived at with the most sympathetic consideration of the difficulties involved. The evacuation of hospitals by the foreign staff has been necessarily precipitate in nature and arrangements have had to be made as best could be done at the moment. In many cases no well considered plan of action could be adopted. The difficulties that the Chinese hospital staffs remaining at their posts of duty have had to meet have therefore been very great. They are to be heartily congratulated on having been able to carry on at all and are hardly to be blamed if standards of efficiency have had in many cases to be lowered.

The Secretary would very much like to collect details of every hospital now running under local arrangement with the Chinese staff or under a local Boards of Management with a statement of the arrangements made and the difficulties that have had to be met. These statements would not be for publication but for filing in the office with a view to careful study of the problem of hospital management in China.
Attempts will be made in later issues of the Journal to review the position of Hospitals in the provinces not covered by the present report and a separate review of the position of the Medical Schools which requires very careful consideration at this time.

THE I. H. T.

Among the casualties of this trying time it is especially disappointing to have to enter the Institute of Hospital Technology on the list. This latest infant of the Association may be said to have had a prolonged period of gestation, and its actual birth might be fairly described as a case of dystocia. Despite this the child has thriven wonderfully under the capable care of Dr. George Hadden as its nurse and in its ideal home in St. James' Hospital, Anking, where every attention has been given to it. Now, just as it was rapidly growing up into an early but most promising adolescence the blow has fallen and for the time being at least its usefulness is largely at an end or, to continue the simile, it has had an attack of infantile paralysis.

Happily, however, its activities have lasted just long enough to convince us all of the great importance of its work, and of the necessity of putting it on its legs again as soon as this possibly can be done.

While we face the future of medical mission work in China with a growing feeling of confidence there are certain implications that the present situation has brought about which must increase the difficulty of the work and which it would be folly not to realise.

One of these is the dearth of well trained Chinese medical men during the next few years. This is no new story but it behoves us to recognize that, bad as past years have been in this respect, the next few years are going to be infinitely more difficult along this line.

The large majority of first class medical schools are entirely closed down or merely kept alive by a skeleton staff of professors. It follows that the supply of doctors for China is going to be more than ever hopelessly inadequate. The demands on the other hand are likely to be larger than before as the new order of things in China replaces the old. Can anything be done to meet the immense difficulties of the case? We believe it can through a greatly enlarged and strengthened I.H.T. in the future. If the doctors of the coming era are allowed to devote their entire time to medical practice and not, as of old, also to hospital management, pharmacy, and the technical side of pathology, X-ray work &c, there will be a better chance of the field being completely covered than in the past years. The I.H.T. has already shown its ability in training technical workers at a comparatively nominal cost, and to the great satisfaction of those who have been
able to employ them after their course of training. Such workers are not as a class men of such high education and prolonged training as to necessitate the payment to them of large salaries. Every hospital should have at least two such technicians, and more if the hospital is a large one. We believe that this would allow the doctor himself to devote much more time to his strictly professional work and thus obviate many a breakdown.

This is a view of the case which, if correct, must be very carefully considered by the Missionary Societies and Boards. Some joint plan of action must be taken to make a worthy institute of hospital technology which can undertake the training of much larger numbers than heretofore has been possible. The China Medical Association has this matter under consideration and will be prepared at the right time to put this problem of joint action before the Mission Bodies at home.

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THE MOSQUITOES OF CHINA

The identification of mosquitoes found in China is a matter of no small importance. All the three leading groups—Anopheles, Culex, and Aedes (Stegomyia) contain species that are proved to be carriers of important diseases here. To Anopheles we owe malaria; to Culex, filariasis; to Aedes, dengue fever. There is reason also to suspect that their crimes are not confined to transmitting these diseases alone.

The importance, therefore, of being able to identify the various species of mosquito is self-evident, and we are glad to give as wide publicity as we can to a letter we have just received from Dr. Henry E. Meleney of Peking Union Medical College. We quote part of his letter as follows:

"I am sending you under separate cover a copy of a small booklet which we have had just printed containing Instructions for Collecting Mosquitoes in China. You will notice in the foreword that we are anxious to establish here in Peking a permanent collection of the mosquitoes of China which will be representative of the whole country. We are anxious to have as many people as possible cooperate in the development of this collection and are willing to supply any interested persons with the equipment necessary for collecting. I shall appreciate it very much if you will be good enough to make some mention of our purpose and of this booklet in the "Journal".

The booklet referred to has reached us and we are prepared to say that it could hardly be improved on for the clarity and precision of the descriptions and instructions that it provides for carrying out this special work."
Editorials.

It is a little unfortunate in its time of issue, with the bulk of the medical superintendents removed temporarily from their spheres of action by the present political conditions, but we hope that as many as possible will obtain a copy of this booklet from Dr. Meleney and be prepared at the first opportunity to do their share in this important campaign. We very warmly commend it to all our Members in China.

We are glad also to promise a paper from Dr. Meleney in an early issue of the Journal on the anopheline mosquitoes of the Peking area.

PROTEIN THERAPY IN EYE INFLAMMATIONS.

We are particularly glad to be able to publish an article on this subject from the pen of Dr. Harvey J. Howard. It is with great regret that the Members will learn that Dr. Howard has left China and is not likely to return. He has always been a warm supporter of the Journal, contributing articles distinguished for their clearness of diction and the practical nature of the subjects dealt with. We trust that Dr. Howard may not lose entire touch with the Journal even in his busy life at home in which the Members of the Association will all wish him every success.

Protein therapy is a comparatively new method of treatment, and, if we are not mistaken, has not met with the success it deserves out here. The main reason for this we believe to be due to the fact that such treatment has often been half-heartedly applied. We must certainly plead guilty to this ourselves in our own former clinical work.

Success in Protein therapy depends eventually on efficient treatment with full doses of whatever proteins are employed. We suspect that failure in the past has often been due to ignorance of this essential rule.

SHANGHAI HEALTH DEPARTMENT.

In the midst of turmoil and disturbance it is a pleasure to record signs of real progress here. Menus sana in corpore sano is one of the truest as well as one of the most time honoured of proverbs, and one cannot help speculating on how much of its present unrest China owes to the lack of physical health in its peoples. Certainly a contented nation infers one with a properly developed health conscience and this has been particularly slow in developing in this country.

There are promising signs however of a better day now dawning, and among these is the action of the Chinese Municipality of Shanghai in organising a Health Department on modern lines. A paper from Dr. Hou-ki Hu published in this issue of the Journal gives a general
survey of the work of this Department, and Appendices thereto on the rules governing the Board of Health and for the registration of Medical Practitioners are of considerable general interest.

We had the pleasure ourselves some months ago of visiting the Health Department and of seeing the work done there and would gladly testify to the efficient beginning that was then being made.

In Dr. Hu the Board had an exceptionally fine man for the inauguration of such work and we are correspondingly disappointed that changes of government have brought about his relinquishment of this post. * We trust however that the check to progress thus given will be only temporary and we believe that not in Peking, Canton and Shanghai alone but in many of the larger cities of China such developments will shortly take place. Already they are beginning in a small way in a number of the principal places.

We feel however that to be truly successful two important requirements should be met. The health work should belong to a separate Ministry and be completely divorced from the control of any other department, and the scientific side of this work should be removed entirely from the political sphere and from the constant change of personnel that such political affiliations suggest. Only thus, as we see it, can China develop an efficient system of Public Health.

THE POSITION AT HANKOW.

Recent newspapers have contained many accounts of the serious condition of the wounded soldiers who have been brought down to Hankow. The hospitals are full to overflowing, one doctor has broken down under the strain and with all they can do the bulk of the wounded have apparently still to remain untreated. Needless to add most of the doctors who have so willingly given unlimited service in the past have been driven out by the action of the supporters of the Hankow Government and there are none to take their place.

Under these circumstances an appeal has been made to organise a Red Cross party to deal with the situation. The Peking Union Medical College have sent down the nucleus of such a party headed by Mr. Roger S. Greene and Dr. F. C. Yen and this has been considerably enlarged by a contingent of doctors and nurses, Chinese and foreign from Shanghai. The Chinese authorities in Hankow have undertaken to meet all the expenses except the salary of foreigners.

*Since writing the above, we understand that arrangements have been made for Dr. Hu to resume his appointment.
Editorials.

At the time of writing about thirty in all have gone to Hankow and others are prepared to follow when investigations on the spot have shown what the needs of the position really are.

PUBLIC HEALTH APPOINTMENTS IN THE UNITED STATES.

The attention of the Members is called to a letter from Mr. Roger S. Greene which he has kindly allowed us to print in the correspondence columns of this issue. There is a certain proportion, we trust only a small one, of the doctors who have been compelled to leave China who will not be returning here. To any such the suggestions in Mr. Greene's letter may be heartily recommended. Those who have practised in this land should have a more than usually high appreciation of the need of Public Health work and we are grateful to Mr. Greene for calling attention to the opportunities for service in this direction.

AN APOLOGY.

The Editor has to confess that he has been caught napping and herewith tenders his apology to Dr. Henry E. Meleney on the entirely unwarranted attack made on him in a letter written on behalf of Poulenc Freres and published in the March issue of the Journal. A letter printed under Correspondence in this number, from Dr. F. R. Dieuaide, and to which readers are referred, explains fully the position. Needless to say the Editor took the original letter in good faith as a criticism of a published paper, or would not otherwise have printed the letter. He regretfully acknowledges that he might and should have taken other steps to ascertain the bona fides before allowing the publication of the letter.

A copy of Dr. Dieuaide's letter was sent to Messrs. Poulenc Freres as soon as it reached the Editor with a request for an apology from them both on behalf of Dr. Meleney who was attacked and the Editor on whom this trick was played. It is greatly to be regretted that no acknowledgement has been received of the Editor's letter from the firm.
In view of the obscurity of the situation as regards the Hospitals in China, the Executive Committee has decided to publish in the China Medical Journal a review of the present position in such detail as is obtainable.

It must be clearly understood however that there are two drawbacks to this course of action, which make the accompanying statement of less authoritative value than it would otherwise have been. On the one hand the position is rapidly changing so that what may be true one day may be incorrect the next; on the other hand the material has been gathered from many sources and with considerable difficulty with the result that a few errors are almost inevitable and details of some areas are incomplete.

The attempt will be made however to indicate the position in all the Mission Hospitals in China arranged according to the Provinces.

**KWANGTUNG: General Summary.**

Excluding Canton and Swatow cities, ... Hospitals 18.  
Running normally under foreign superintendence, ... 2.  
Under temporary arrangements with Chinese staff (except Kongchuen and Hopo, see note below)... ... 10.  
Closed, ... ... ... ... ... ... 6.  
Canton and Swatow, ... ... ... ... ... Hospitals 8.  
Running normally ... ... ... ... ... 6.  
Closed ... ... ... ... ... ... 1.  
Taken over under forced agreement by the Government, 1.

Not a few of the hospitals in the country districts of this province have been able to continue their work despite the extraordinary difficulties they have had to face, thanks to the continued loyalty of their Chinese staffs. With hardly an exception the foreign medical superintendents have had to leave, though in places near Canton and Swatow more or less frequent visits from the medical superintendents have been usually possible. In view of shortness of staff, labour difficulties and military intrusion, the standards have in many places been considerably lowered but there can be no doubt of the splendid work that these hospitals are still carrying on.
Fatshan, W. M. M. S., is especially to be congratulated on having been able to open a new childrens' ward despite the difficulties of the situation.

Kongchuen, P. C. N. Z., occupies a special position as being the first hospital to be officially taken over by the "Church of Christ." This was only done after very careful examination by a Committee of that Church into the problems that had to be faced and we believe that a worthy example of what can be done along this line will result and will lead to great developments in the future of mission hospitals in Kwangtung. In one or two cases, notably that of Hopo, A.B.F.M.S., the hospitals had already been fully organised under Chinese management and are carrying on as before.

As an exception to the general statement in regard to the country hospitals given above there are a few hospitals that have been compelled to close their doors. Two causes have been at work to necessitate this. First, shortage of staff. Where a well-established Chinese staff has not been in existence at the time when the troubles began it is evident that the difficulties of procuring suitable men are usually insuperable. At the best of times the supply of trained Chinese doctors is inadequate and country hospitals find it particularly difficult to secure such. The second reason is the financial one and this must be admitted at once to be a very serious one. The sudden removal of an experienced and much beloved medical superintendent is at any time a serious blow to a hospital owing largely to the personal element in medical treatment which everywhere counts for so much. At the present time such a blow is doubly serious, when the people are naturally in a "nervous" condition and when much work has to be done for the military from whom little or no payment is received. The general result has been a serious depression in the financial position of the hospitals and this where combined with the shortness of staff mentioned above has necessitated the closing of certain hospitals. These have so far been: Shiuchow, W.M.M.S., Linchow P.N., Yeung Kong (?) P.N., Kongmoon U.C.C. (probably), and Shekki P.C.C.

On the other hand it should be mentioned that two country hospitals are carrying on with their foreign staff. Kaying, B, is running as usual with two German doctors. Kityang A.B.F.M.S. has continued with Dr. Leach in charge.

A separate paragraph must be given to the position in Canton, and Swatow.

In Canton the Leung-Kwong Hospital, S.B.C., has been able to continue its work without any interruption; the David Gregg Hospital P.N., is also carrying on as before. The position of the attached Hackett
Medical School will be dealt with separately under medical schools; the Ling-Naam Hospital (former C.C.C.) is carrying on more or less normally; Dr. Todd's Private Hospital is doing excellent work without interference. On the other hand the Canton Hospital C.M.M.U., was the first hospital to be forcibly closed by the Labour Unions and has not been able to re-open since. The position of the J. G. Kerr Hospital for the Insane, P. N., has been fully stated in previous papers. Part of it has been taken over by the Government on what might be described as an enforced agreement. The rest of the hospital is supposed to be closed but we understand that the terms of the agreement have already been broken by the Government.

In Swatow the General Hospital and Women's Hospital, E.P.M., have been able to carry on through all the troubles without any interruption and with their foreign staffs. The Scott-Thresher Hospital, A.B.F.M.S. on the opposite side of the harbour has also carried on normally with its foreign staff and is improving its premises and equipment.

**KWANGSAI:** General Summary.

Hospitals:— Running normally under foreign superintendence:- 4.
Under temporary arrangement with the Chinese staff:- 1.
Closed:- 3.

Despite special difficulties in connection with rioting in Kweilin, the hospitals have managed to carry on as noted above. In the case of the Wuchow Hospital, S.B.C., which was closed and partly looted a year ago, great improvement has taken place and the foreign medical superintendent has been able to return.

**KWEICHOW:** Of the two hospitals in this province the work of that at Tungjen E.C., is being carried on by the Chinese staff; the hospital at Kweiyang C.I.M., is closed.

**YUNNAN:**

Hospitals:— 5.

The position in Yunnan is obscure. Up till a short time ago the hospitals in this province were functioning normally. Quite recently, however, news has come that foreigners have been ordered out of the province. Whether this includes the doctors and whether it covers the whole province is still uncertain.

**FUKIEN:** General Summary.

Hospitals:— 30.
Running under normal foreign or Chinese superintendence:- 7.
Under temporary arrangement with Chinese staff:- 18.
Closed:- 5.
The position of the hospitals in Fukien is very much the same as that in Kwangtung. The country hospitals are being generally carried on by the Chinese staffs, while those in Foochow, Pagoda and Amoy continue to run normally under their foreign medical superintendents. In regard to this general statement a few exceptions must be noted.

**Foochow.** Magaw Hospital, M.E.F.B., is closed though there are some hopes of being able to reopen shortly.

**General Hospital,** C.M.S., suffered considerably in the riots that took place in March. Work is continuing under the Chinese staff with occasional visits from the foreign medical superintendent.

In respect to the country hospitals, Siennyu, M.E.F.B., and Kienning West, A.B.C.F.M., are closed. Changpu, E.P.M., is also closed. The hospital here was on the point of being reopened when the troubles began and it proved impossibles to do this under the circumstances. On the other hand Shaowu, A.B.C.E.M., is running normally under its foreign staff. The position at Yenping, M.E.F.B., is peculiar. This hospital has been taken over by the military but not only has it not been closed down but Dr. Skinner has been confirmed in his position as Medical Superintendent there and rumour says that he has been given military rank!

**Hunan:**

It is this province more than any other that has borne the brunt of the extreme Communist attack with disastrous results to every Christian and philanthropic institution. As far as we have been able to ascertain there is only one hospital in the province running properly Paeking W.M.M.S., Another possible exception is Hungkiang, C.I.M. Most of the hospitals are entirely closed, some have been more or less looted. There is talk of re-organising the Changsha Hospital (Yale) but just what this amounts to it is difficult to say; all the foreign and almost all the Chinese staff have left.

**Kiangsi:** *General Summary:*

<table>
<thead>
<tr>
<th>Hospitals:</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running under foreign staff:-</td>
<td>0</td>
</tr>
<tr>
<td>Under well-organised Chinese management:-</td>
<td>2</td>
</tr>
<tr>
<td>Under temporary arrangement with Chinese staff:-</td>
<td>2</td>
</tr>
<tr>
<td>Closed:-</td>
<td>3</td>
</tr>
</tbody>
</table>

Next to Hunan this province has probably suffered the most from the Communist invasion. This has been much more recent than in Hunan, probably is not quite so general and is already passing over and the hospitals have been much less affected. For some time after the southern invasion the hospitals continued to function in a remarkable manner but with the coming of the red element the conditions
The hospitals at Kuling had of course already been closed down with the evacuation of that place. Jaochow, C.I.M., and Kukiang Mens' Hospital M.E.F.B., are also closed. The work of the Kukiang Womens' Hospital M.E.F.B., and the Nanchang Womens' Hospital, M.E.F.B., has not been seriously interrupted. Both these hospitals have been for a considerable time under the charge of Chinese women doctors, that at Nanchang being under Dr. Ida Kahn one of the very senior and best known of the Chinese women physicians. The Nanchang General Hospital, M.E.F.B., is still functioning under its Chinese staff.

CHEKIANG: General Summary.

Hospitals:- ... ... ... ... ... ... ... 9.
Running under supervision of foreign staff ... ... 3.
Under temporary arrangement with Chinese staff ... 4.
Closed:- ... ... ... ... ... ... ... 1.
Seized by local authorities:- ... ... ... ... 1.

On the whole, and with one very notable exception, the position in this province has been favourable.

Ningpo, A.B.F.M.S., continues to run very smoothly under its Chinese staff with fairly constant supervision by one or other of the foreign doctors. Ningpo, C.M.S. has had to close down owing to labour trouble.

Shaoching, A.B.F.M.S., and Huchow Union, M.E.S. and A.B.F.M.S., are continuing their work uninterrupted with occasional visits from the foreign medical superintendents.

Wenchow, U.M.C., has continued to work without serious difficulty through all the troubles. The doctor has recently had to leave on consular orders alone. The hospital continues to function under its Chinese staff.

Kinhwa, A.B.F.M.S., is also functioning under a Chinese staff.

Kashing, P.S., The position here is a unique one and some are questioning the desirability of the arrangements made. For some time after the taking of Kashing by the Southern Army the work of the hospital continued satisfactorily, though of course on a diminished scale, under the Chinese staff. Occasional visits were paid to the place by the Medical Superintendent. We understand however that the difficulties of financing this large hospital were considerable and eventually the hospital was closed. After this had been formally carried out the buildings were temporarily rented to the Chinese doctors to carry on hospital work independently without cost to the Mission and meeting their own expenses and salaries thereby.
Hangchow, C.M.S., is unfortunately in an entirely different position, and is the notable exception referred to above. Local circumstances here were particularly adverse probably due not a little to the fact that a Government medical school already existed in the city. This school was of a very low standard and compared very unfavourably with the C.M.S. School. Undoubtedly this gave rise to much jealousy of its more efficient neighbour. The hospital was seized and both the foreign staff and practically the whole of the Chinese staff were forced out. The hospital is still in the possession of the insurgents despite the fact that they would appear to have made a miserable failure of their attempts to carry it on. The position of the medical school will be referred to later.

Kiangsu: General Summary.

| Hospitals, except in Shanghai | 20 |
| Running normally with foreign staff | 1 |
| Under temporary arrangement with Chinese staff | 7 |
| Closed: | 9 |
| Looted: | 2 |
| Seized by military: | 1 |

Shanghai, Hospitals:

| Running normally | 6 |
| Closed: | 1 |

This province has been one of those most affected by military movements possessing as it does the two extremely important cities of Shanghai and Nanking. Soldiers have been poured into it from all sides and it has been one of the principal centres of the conflict. As a result the hospitals in the province have suffered more than elsewhere except those in Hunan and Hupeh. Two hospitals, Changshu, A.C.M., and Yangchow, S.B.C. have been looted, while Taichow, P.S. has been largely destroyed by bombardment. The University Hospital, Nanking, Union, has been seized by the military, the staff both foreign and Chinese having had to leave and it is said now to be staffed by male nurses instead of doctors. In addition to these the following hospitals have had to be closed principally on account of the lack of Chinese Staff:—Chinkiang, P.S., Haichow, P.S., Jakao, C.R.C., Nantungchow, U.C.M.S., Tsingkiangpu, P.S., Wush, A.C.M., Yencheng P.S., and Chiao Tun Djen, S.D.A. In the case of the last named the hospital building was not completed and work on it has had to be suspended. The only hospital running normally with foreign staff is that of Liuho, S.D.B.

With regard to Shanghai, hospitals in the settlements are running normally and the Margaret Williamson Hospital outside the West Gate has weathered the storm after passing through a rather critical period. The Bethel Hospital, Drs. Mary and Phebe Stone has had to be closed.
Seeing that this is purely a Chinese hospital the extremely bitter attack on the place is particularly strange, but is probably explained by anti-Christian propaganda.

**ANHWEI: General Summary.**

<table>
<thead>
<tr>
<th>Hospitals</th>
<th>Running under foreign superintendent</th>
<th>Under temporary arrangement with Chinese staff</th>
<th>Closed</th>
<th>Seized by military</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Two hospitals stand out in this province. Wuhu M.E.F.B., which has been able to carry on through all the troubles and Anking A. C. M. which after successfully carrying on through most of the troubles was finally seized by the military. Attached to this hospital was the Institute of Hospital Technology which, of course, had also to be closed. We understand that the present condition of the hospital is very distressing and that typhoid fever and infectious diseases are rife in it. Four of the hospitals have had to be shut down mainly for lack of staff, these are:—Hwaiyuan P. N. Womens' Hospital, Tunki M.E.F.B., Nanhsuchow P.N. and Pochow S.B.C:

**HUPEH: General Summary.**

<table>
<thead>
<tr>
<th>Hospitals, except those in Wuhan</th>
<th>Running under temporary arrangement with Chinese staff</th>
<th>Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wuhan, Hospitals:—

The general position in the province outside of the Wuhan cities is unsatisfactory. Conditions are extremely difficult especially with regard to the financing of the hospitals in the war area. Silver is not allowed to be held by the people in Wuhan and cannot be sent to country districts, paper money is almost worthless. Under these circumstances it is remarkable that any of the country hospitals have been able to survive and several of these are open only to a limited extent and in a precarious condition. Anlu W.M.M.S. has so far been able to carry on under Chinese staff. Siaokan L.M.S., has only been able to keep open a few beds and the existence of the well known leper hospital there is very seriously threatened. Ichang C.S.F.M., Mens Hospital is half open while the womens hospital has been loaned to the Chinese doctor to run as best she can at her own charges. Teian W.M.M.S. is still open under Chinese staff. Hwangchow S.M.F. and Siangyang Cov. M.S., are closed.

**Wuhan.** All the hospitals here, three W.M.M.S., three L.M.S., and two A.C.M. are all open. Two of them have more or less foreign
supervision. The Hedge Hospital is in the charge of a well known Chinese member of the permanent staff. The other hospitals are running under temporary arrangement with a Chinese staff.

**SZECHWAN: General Summary.**

Hospitals:— ... ... ... ... ... ... ... 19.
Running under foreign staff or supervision: ... ... 2.
Under temporary arrangement with Chinese staff: ... 12.
Closed: ... ... ... ... ... ... ... 5.

The position in this province differs materially from that already outlined in the foregoing notes. In few, if any, places was there any hostility to the foreign doctors and the province has not been directly involved in the present fighting. The doctors have had to leave their stations on Consular orders much against their own desires. Where, therefore, hospitals have had to close down it has been entirely due to the lack of any Chinese staff able to carry on temporarily. In this connection it must be remembered that medical work in this province is comparatively recently established and the supply of Chinese doctors is even more than usually limited. In Chengtu itself two foreign doctors are left and are able with the Chinese staff to carry on the hospital more or less normally. Batang U.C.M.S. is also working under its foreign superintendent, distance probably making it impossible for him to get away. The following hospitals are closed:—Jenchow, U.C.C., Kiating, U.C.C., Penghsien, U.C.C., Tatsienlu, S.D.A. and Suifu A.B.F.M.S. In the last of these places although the hospital is closed a dispensary is being kept open.

**COMMENTS**

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

<table>
<thead>
<tr>
<th>Total of Hospitals</th>
<th>More or less normal under permanent staff</th>
<th>Under temporary foreign or Chinese staff</th>
<th>arrangement with frequent supervision Chinese staff</th>
<th>Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>170</td>
<td>35</td>
<td>71</td>
<td>55</td>
</tr>
</tbody>
</table>

also 4 seized by military and 5 (in Yunnan) particulars as to which have not been received.

With regard to the total of hospitals there are a few in these provinces not included in this list, probably not running into double figures. These are mostly small and the staff not being members of our Association we have no particulars with regard to them. It is probable that these would need to be added to the "closed" list.
It is no little satisfaction to know that 71 hospitals are running under temporary arrangement with the Chinese staff but too much must not be made of these figures. In many cases the staff is inexperienced and hardly qualified for the heavy strain thus thrown upon it. Financial difficulties of a very grave character have also to be met and it is not likely that more than half of these hospitals can survive for any very long period. There are also four that though still running have been seized by the military. These are without exception large hospitals and the work now done in them is probably of an extremely poor quality. We know of one of which we are told that the doctors both foreign and Chinese have been expelled and the medical work is being done by male nurses in their place!

The list of hospitals closed includes two that have been completely looted, probably many others have suffered to a less degree and one that has been destroyed by bombardment.

It has been found impossible in this paper to deal with the hospitals in the northern provinces but we shall hope to take up the position of these and of the Medical schools in later articles.

HODGE MEMORIAL HOSPITAL (W.M.M.S.), HANKOW.

PROGRESS REPORT.

H. OWEEN CHAPMAN

In view of the critical state of this hospital, as depicted by the report in the February issue of the Journal, and because of the unusual vicissitudes it has since then successfully surmounted and of its relations with the government here, a progress report at this stage may be of interest and not without its significance to the Members of the Association.

After the departure of Dr. Pell and Miss Bartleet, the medical and nursing superintendents respectively, at the end of December, the hospital was left with the senior staff on duty consisting of Dr. H. T. Chiang (Edin) medical superintendent, Dr. Y. T. Chang, and three Chinese N. A. C. graduates of two, two, and one years' standing respectively, as compared with a staff which has been maintained during the previous few years consisting of one or two foreign doctors in addition to the above, one or two foreign nursing sisters, and four or five N.A.C. graduates.

Dr. Chiang immediately closed down 27 out of the 84 beds, but in March, although hard pressed for staff, was driven to open them again for fear lest the wards should be occupied as soldiers' barracks or to
house political organisations, as neighbouring Mission buildings have been. The following is a table comparing certain aspects of the work done during the first four months of this year with that of a similar period in 1925. The year 1926 has not been chosen for comparison because these months in that year were quite abnormal owing to the hospital being greatly overfilled with a large influx of wounded soldiers.

<table>
<thead>
<tr>
<th></th>
<th>Jan. 1925</th>
<th>Feb. 1925</th>
<th>Mar. 1925</th>
<th>April 1925</th>
<th>Total 1925</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. beds</td>
<td>1353</td>
<td>1332</td>
<td>2442</td>
<td>2470</td>
<td>7597</td>
</tr>
<tr>
<td>occupied daily</td>
<td>1452</td>
<td>1335</td>
<td>2171</td>
<td>2123</td>
<td>7081</td>
</tr>
<tr>
<td>Out-patients</td>
<td>1169</td>
<td>1378</td>
<td>1732</td>
<td>1755</td>
<td>6034</td>
</tr>
<tr>
<td>Theatre</td>
<td>24</td>
<td>48</td>
<td>64</td>
<td>53</td>
<td>189</td>
</tr>
<tr>
<td>operations</td>
<td>30</td>
<td>16</td>
<td>45</td>
<td>46</td>
<td>137</td>
</tr>
</tbody>
</table>

It will be seen from the above that the quantity of the work has been maintained surprisingly well.

As none of the three remaining staff nurses were capable of undertaking the responsibility of nursing superintendent, this function was exercised by a committee of the whole senior staff, and, where it was necessary to expel a nurse a meeting of the entire nursing staff was called, a most cumbersome method, but one which served in the emergency. The morale of the nursing staff was fast reaching a state that would have driven most men to despair. Although two of the most violent of those nurses who had taken the leading part in breaking up the hospital a month or two previously had left, there were still a number remaining amongst the staff; and it was impracticable to dismiss them. In the feverish excitement of labour organisation which was sweeping Wuhan at the time, the hospital servants joined the "Foreign Servants' Union," and by threat of personal violence and blockade of the hospital secured a rise in wages of $4 each with a guarantee of three months' bonus on dismissal and other privileges. Both doctors and nurses were now persuaded or coerced into joining the "Foreign Employees' Union." Although in the most flagrant cases discipline was still exercised by the staff committee, in regard to the great majority of the rules the nurses pleased themselves, taking time off duty when they liked, and even going so far as to openly sleep on night duty. Out of twenty eight nurses on the staff on 1st. January, before the 30th April the names of twelve had been removed from the hospital register. Of these eight had left to become doctors in the Nationalist armies, three had been expelled for stealing or embezzlement, and one had died. The ward nursing and doctors' orders in the first two months were disgracefully neglected. Practically none
of the staff now attended the church services. For over a month all religious services for the patients had to be discontinued. To myself, returning to Hankow from up country at the end of January and able to compare the condition of the hospital with its former efficiency, it seemed that it would have been better to close down. At times Dr. Chiang felt this himself; but it was impossible to foresee what rioting, exorbitant demands, or destruction of property would result from a decision to close; and in such a case no protection was likely to be afforded by the government. In any case the buildings would almost certainly have been occupied by the military or by political organisations.

Just at this time overtures were made by the newly created Public Health Department of the Hankow Municipality for the placing of the hospital together with the adjoining Jubilee Hospital for women and the Hankow London Mission hospitals under the control of the Health Department to be run as a municipal hospital for two or three years. The whole of the present staff was to be retained; the hospital was to be managed by a joint committee appointed by both sides; the W.M.M.S. was to continue its former annual grant, but any additional expenses were to be provided by the Municipality; the hospital's work was to be carried on as before, but the staff was to co-operate as much as possible with the Board of Health in public health work; every reasonable opportunity was to be given for direct religious work, and the Municipal Council was to secure freedom from strikes and other disturbances. Practically, the Mission staff was to do the work without hindrance, and the Municipality was to have the name, and the honour and glory.

On these lines ran the main features of the proposals for the four hospitals, and they were taken up very earnestly and whole-heartedly by the hospital committee, partly as being the only apparent means at hand of saving the hospital from smashing amidst the crash of so many surrounding missionary organisations, and partly from a genuine eagerness to co-operate with such a valuable constructive policy of the Nationalist Government.

The first Municipal Medical Officer who opened negotiations with us was a man who was obviously eager and determined to set and maintain a high standard of work in his Department. He dismissed a number of "medical" and other employees from the department, and shortly afterwards had to follow them in vacating his post. It was next filled by Dr. Tsefang F. Huang of nation-wide reputation, with whom we even more gladly and confidently continued negotiations. These were practically completed when Dr. Huang, having had a few weeks of office to gauge the potentialities and prospects of the situation, resigned. The third person appointed to the position was Dr. Wang,
C. M. A. Section.

recently of the Hsiang-ya hospital, Changsha. Just at this juncture the Board of Health was abolished, and public health work was relegated to the position of one of the activities of the Public Safety Department. Dr. Wang resigned three days after assuming office, when a fourth appointment to the position was made. We lost touch at this point; and further negotiations have been deferred until the political situation becomes a little more settled.

Towards the end of March the industrial situation in Hankow was felt to be not quite so threatening to the hospital. Although, because of the Nanking incident, it was thought advisable to evacuate Dr. Sarah Wolfe, the superintendent of the sister Jubilee Hospital, this hospital’s staff have throughout the whole revolutionary period repelled all attempts of agitators to break their morale, and have loyally and cheerfully carried on their work. The two London Mission hospitals have also been absolutely unshaken by the currents sweeping round them.

Early in April two senior staff nurses of fine character and personality, who had been away taking courses in technical training in distant hospitals, returned; and there began to be a slight though noticeable improvement in the routine nursing work. The servants, having established their trade union and secured their advance in wages in January, have since been carrying on their work steadily and satisfactorily as before.

Towards the end of April the probationer nurses suddenly made an uncompromising demand for an extraordinary increase in their monthly allowances, the agreement mutually accepted after the nurses’ strike last November having fixed these at $1.50, $2, $2.50, and $3 for the four grades respectively. The demand was discussed with representatives of the Executive of the Foreign Employees’ Union, and eventually a compromise was agreed to at $3, $5, $7, and $9, the Union guaranteeing the good behaviour and loyalty of the nurses under the agreement. Though there are some of the hospital committee who regard with misgiving both the amount agreed on and the method used in arriving at it, it is a fact that there has been a prompt and unmistakable improvement, not only in the cheerful and willing spirit of the probationer staff, but also in the quality of their work and discipline.

Since the middle of April there has been a revival in church attendance, and now over half the nurses and some of the servants are attending the Sunday services when off duty. Ward services are being regularly conducted, though not yet in all the wards as in previous years, and preaching in the O. P. Department as opportunity offers. Nurses’ lectures were commenced a week ago. To the two staff nurses above referred to there has been added a third of sterling value who
has just graduated. If in addition to these it were only practicable for Miss Gladys Stephenson, who is designated as nursing superintendent, to take up duty, the hospital could be considered as well advanced on the road to recovery. As regards the external situation, in view of the imminent influx into Hankow of considerable numbers of wounded soldiers, renewed attempts have been made on the part of the army medical service to take over control of the institution. The hospital has however been definitely guaranteed against such action by the Department of Foreign Affairs; and it is preparing, as it has always done in the past to itself freely assist in this military work to the utmost possible for its staff and equipment.

As locum tenens in the Women's hospital next door, I have been able closely to watch this drama unfold. Dr. Chiang by unconquerable patience and unbelievable forbearance is succeeding where almost any foreign superintendent would have failed. Four months ago the word ICHABOD was written large over the portals of the Hodge: the letters one by one have been quietly taken down, and to-day they are writing up in their place IMMANUEL.*

THE CHRISTIAN HOSPITAL, KASHING

F. R. Crawford, M.D.

The foreign staff left Kashing early in February. This action was taken in connection with the evangelistic and educational workers, and was based on advice given us by local Chinese Christians. At that time the hospital was left in the charge of the Chinese staff who agreed to run it for the mission. The writer made two trips to Kashing following his departure in February, the second one was in March when he was in Kashing for about two weeks. This was after the Nationalists troops had come, and covered the period of the Nanking trouble.

So far as it was possible to see the Chinese staff fulfilled their agreement to carry on the hospital for the mission quite faithfully. The writer did not resume control during his visit in March.

During April the mission decided that it would be wisest to close the hospital. Rather lengthy discussions were carried on in Shanghai between the mission and the Chinese staff and it was finally decided to close under the following agreement, the closing to be followed at once by an agreement to rent the hospital to the staff.

*In regard to this Report of Progress of the Hodge Memorial Hospital, and while heartily congratulating the staff on being able to carry on, it is necessary to point out that this has only been possible by giving way almost wholly to the demands of the Labour Union.—Editor.
C. M. A. Section.

Under the agreement to close the mission promised to pay all grades of employees three months salary in advance. As many of the employees had been with us for years, some of them for more than twenty years, this was not considered too much. The mission further agreed to pay those holding contracts, extending beyond the three months period mentioned above, to the end of their contracts. There were three such contracts. Nurses' deposit fees were also returned to them. The employees on their part agreed to sign a receipt and quit claim, this to be done individually. They further agreed to assist in removing to Shanghai any equipment which the mission wished removed. This promise has been projected forward to the time of possible closing after the period for which the hospital has been rented.

Under the agreement to rent the following arrangement was entered into.

The staff agreed to pay a nominal rental, thus acknowledging the fact that the property is owned by the mission.

They agreed to maintain the Christian and charitable traditions of the hospital, making mission paid evangelistic workers welcome in the waiting room and wards. They agreed to purchase for cash the drugs on hand at about 70% of their inventoried value. They also agreed to purchase for cash the motor boat belonging to the hospital. (This money was used in paying advance salaries).

They agreed to rent for the remainder of the hospital's fiscal year, i. e. until March 31st. 1928, and they agreed to keep the hospital open during this period unless forced to close by some agency beyond their control.

Before the end of this period they agreed to enter into negotiation with the mission as to what the future status of the hospital shall be, possibly asking to rerent it themselves.

All equipment except the above mentioned boat was rented together with the buildings. The staff agreed to maintain this equipment and to keep the buildings in repair. At the end of the period everything is to be returned to the mission, including the new equipment bought to replace wornout articles. They assume all financial responsibility. In case there is any profit they are at liberty to keep it if they so desire.

The hospital is rented not to an individual but to a group of fourteen.
The Treatment of Puerperal Eclampsia with Notes on 220 cases treated at the Government Hospital for Women and Children, Madras, during the years January 1922 to July 1926.


*Prevention of fits.*—This is one of the most important of the problems in the treatment of the disease. We do not know definitely what is the causative factor in eclampsia and our treatment must be in the main empirical. We are convinced that the control of fits is essential and that the most important factor to be reckoned with is the high blood pressure. Our treatment then is directed towards the reduction of the high blood pressure. At first we attempted to do this by venesection.

At one stage we used to transfuse normal saline into the veins with the hope that thereby the toxins in the blood would be diluted.

We hold that these measures are unnecessary and undesirable. Since 1922, we have used veratrine, the active principle of *Veratrum viride,* to reduce the blood pressure; 1 c.c. of veratrine (P. D. and Co.) is given subcutaneously if the blood pressure is above 140 mm., and $\frac{1}{2}$ c.c. if it is below. This produces a sharp fall in the blood pressure in 15 to 30 minutes and the blood pressure is kept down for varying periods afterwards. In most cases two injections at an interval of 2 to 3 hours sufficed. We have however given as much as 6 c.c. of veratrine in 24 hours with no bad results. In cases where a high blood pressure persists in spite of repeated injections of veratrine, we have performed venesection with good result. This method of treatment was adopted in the case reported above where the patient had 72 fits. The injection of veratrine produces a rapid and considerable fall in blood pressure and a corresponding fall in the pulse rate. Occasionally the blood pressure falls very suddenly and alarming signs of collapse occur, but these are rapidly overcome if the patient is given an injection of strychnine, and later saline and glucose per rectum.

We have used veratrine very largely as a prophylactic in cases of threatening eclampsia (albuminuria with persistent high blood pressure) with uniformly good results. The injection of veratrine occasionally causes severe vomiting, the patient sweats freely and feels a sinking sensation in the epigastrium. The symptoms however do not persist for long and in a couple of hours, the patient perhaps dozes off to sleep.
Besides the injection of veratrone, morphia is given to check the fits. We start with an initial dose of $\frac{3}{4}$ to $\frac{1}{2}$ grain and repeat it at intervals of 2 to 3 hours if fits persist. Since commencing the use of veratrone we have noticed that it is not necessary to use morphia in such large doses, the maximum we have used being 1 grain in 24 hours.

Care should be taken to see that the patient is kept quiet in a darkened room, and that she is disturbed as little as possible, particularly when she is at all restless or mentally excitable. Under such circumstances it is wise to give an injection of morphia, and as soon as she is under its effects to proceed with the examination, to draw off the urine or to give her an enema.

When the patient is quiet she is given a large soap and warm water enema which is followed by sodium bicarbonate bowel washes (1 drachm to 1 pint) every 4 hours.

We have given up the idea of gastric lavage, which at one time was extensively practised in this hospital. It has not in the least interfered with the recovery of the patient, but on the contrary we are convinced that lung complications occur much less frequently without it. Thus while such complications occurred in more than a third of the cases in the days of gastric lavage, our figures show that they occurred in less than 10 per cent. of the cases at present. If the patient is conscious she is given a saline purge, an ounce of magnesium or sodium sulphate.

We hold that no food of any description should be given for at least 12 hours after the woman ceases to have any fits and regains consciousness. Eclamptics stand starvation quite well and any attempt at forcing food, even if it be milk, increases the chances of fits and might increase the tendency to deglutition pneumonia. When the patient is conscious she is given milk and barley water.

_Treatment of labour._—We hold that _accouchement force_ should never be adopted in cases of eclampsia and we are definitely of opinion that nothing is to be gained by precipitating labour whatever may be the method employed. Our teaching is to leave the woman alone, so far as labour is concerned but to terminate the second stage of labour earlier without waiting for signs of foetal or maternal distress. Thus we deliver the woman if the os is nearly fully dilated and the membranes ruptured. This we do in the interests of both mother and child, the mother because the strain on the heart may be severe and a certain amount of haemorrhage consequent on delivery would relieve it and lessen the blood pressure, the child because we have noted that the longer the foetus is _in utero_ after rupture of membranes, the greater is the degree of oligopnæa or asphyxia.
Of the 220 cases referred to, 211 were delivered in the hospital, of whom 131 were delivered by natural powers and 20 by artificial aid. The maternal mortality among the natural deliveries was 5.34 per cent., while among the aided labours there was a mortality of 16.25 per cent.

Results.—Of the 220 cases treated during this period, 22 ended fatally, giving a gross mortality of 10 per cent. Of these, 4 cases were admitted in a moribund condition and died within 4 hours after admission. Moreover, in judging the results of the treatment referred to above, it is only fair that cases treated by other methods should be excluded. There were 5 such cases with 2 deaths. Excluding the moribund cases and the cases treated along other lines, we get a corrected maternal mortality rate of 7.58 per cent. We are of opinion that if the treatment we have adopted is carried out in all its details, the mortality from puerperal eclampsia would not exceed 6 to 8 per cent. The figures are sufficiently large and the period covered extensive enough to test the value of the treatment adopted.

Indian Med: Gaz: April, 1927.

THE TREATMENT OF MALARIA.

This is an age of synthesis, and some years ago tropical medicine had to welcome the German preparation called "Bayer 205," which has proved to be of great value in the treatment of sleeping sickness both in man and animals. Elsewhere in this issue we report a paper by Dr. Manson-Bahr on his experiences with another Bayer synthetic drug called plasmochin, which it was hoped would give similar results with malaria. Dr. Manson-Bahr's analysis of his cases shows that apparently the pure drug is fairly effective in the treatment of benign tertian malaria, and, in combination with minute quantities of quinine in the treatment of subtertian malaria. It has a low factor of safety, however, and a slight overdose causes cyanosis, sometimes accompanied by methaemoglobinuria. The advance made by the production of this drug is its apparently selective action on the malarial "crescents" or subtertian gametocytes. Finality has not yet been reached and the drug is still in the experimental stages, but the results are distinctly hopeful. In Dr. Manson-Bahr's words, plasmochin "must be regarded as the beginning, not the climax, of a new series of antimalarial drugs."

B. M. J. March 12, 1927.
BERIBERI: ITS SYMPTOMS AND TREATMENT.

A. E. Coyne, M.D., L.R.C.P., L.R.C.S., (Edin.), Superintendent, Gifford Mission Hospital, Nuzvid, Kistna District.

Treatment Medical.—I give every patient Marmite. Patients are instructed to take a quarter of a teaspoonful (twenty grains) of Marmite every morning and evening, or, if they can afford it, three times a day. They mix it with a little water, and take it as medicine, or they spread it on bread, or mix it with their rice or dhâl. I do not allow them to mix it in curry, for I believe the vitamines would be destroyed in this way. Each patient within walking distance of the hospital is told to come each day for some rice bran infusion (tea). If they cannot come or send someone, they are instructed to make the rice bran tea as follows:—Take rice bran (rice polishings from the mill) sufficient to fill the hollow of the hand, heaped up, and add it to a half glass of cold water, and let it set overnight. In the morning strain the rice bran tea through a thin cloth, and take half of it then, and the other half at night. This must be made fresh daily as it sours very quickly. The rice bran tea can be sweetened with sugar if desired.

The patients who can afford it are put on to a vegetable diet, and are not allowed any rice whatever. They are given ground wheat twice a day as a cereal. They are urged to take fruit juices, and if they have no scruples against it, they are urged to eat eggs. The poor are allowed only red rice, and are not permitted to take any white rice at all. They cannot afford to take more vegetables, milk, or eggs, but they get along almost as well as those who can afford a better diet.

Indian Medical Gazette, January, 1927.

EMPYEMA ASSOCIATED WITH INFECTIONS

The Empyema Commission appointed during the War to study the problem found that this type of empyema had a mortality of 30.2 per cent if early thoracotomy were done, whereas in the cases observed early, aspirated periodically for about three weeks until pus became thick and adhesions formed, and then the open operation was done and tube drainage established, the mortality was but 4.3 per cent. Thus a mortality drop of 26 per cent was obtained.

Another observation made elsewhere and independently, showed a drop from 40 per cent mortality to 5 per cent by the above method. The deductions for our guidance in practice are obvious, and no further comment is necessary.

"ENZYMES"—PROPERTIES, DISTRIBUTION, METHODS AND APPLICATIONS

SELMAN A. WAKSMAN, M.S., PH. D., & WILBURT C. DAVIDSON, M.A., M.D.
The Williams & Wilkins Co., Baltimore. G. $5.50

Of recent years an enormous mass of literature has been published on the subject of enzyme activity. Some indication of this is afforded by the facts that the authors of this book have consulted over two thousand references and that the bibliography appended to the volume extends to seventy seven pages. The authors who are a microbiologist and a pediatrician have attempted—to our mind successfully—to concentrate this mass to a reasonable extent and to extract from most of what is valuable. The book contains sections in (1) Properties of Enzymes, (2) Distribution of Enzymes, (3) Methods of Preparation and Study of Enzymes, (4) Practical applications of Enzyme Activity. In each of these sections the medical man will find much information which is of direct practical importance, amongst a great deal which, while interesting enough, is not of direct practical value to him—for example, the use of enzymes in poultry feeding and in the ripening of tobacco. There are short sections on the use of enzymes as laboratory reagents, and on the use of enzymes as therapeutic agents. The authors are very dubious as to the value of enzymes in the latter respect.

There is an error in the description of the "Catalase Index" on Page 80, which renders the paragraph quite meaningless.

We can recommend this book to all those who are interested in the subject, as a most useful book of reference. The very full bibliography will be of great assistantance to research workers. W. S. R.


This book of 414 pages is an invaluable introduction to Actinotherapy written in a thoroughly interesting style and easily understandable by the uninitiated. It is full of useful advice to one who is commencing the use of Ultra-Violet Radiation.

The opening sentence of Chapter I is "In the beginning God said Let there be light" and the reader is led by most interesting stages through the history of this formation of the greatest healing element to the various uses to which it has been put in Medical Science, with special reference to the splendid work done by the late Professor Finsen.

Though the Authors kindly give the reader permission to skip the chapters describing apparatus, merely reading that which deals with the particular one in which he in most interested "if his interest begins to flag," most readers will find their interest well maintained even here.
Benefit to and even cure of patients suffering from such a wide variety of diseases is claimed that one might be sceptical were it not that the account is written by such practical workers and in such a convincing style.

Advice as to the methods in treating very many diseases is given, and probable length of treatment required, in such a way that no charge of too great optimism can be levelled against the Authors. Fuller details of the treatment of Pulmonary tuberculosis would be helpful to the General Practitioner who is faced with the usual question "How long am I to go on with this treatment?" but enough is said to enable the beginner to proceed with confidence in the treatment of the majority of cases, of other conditions.

It is particularly interesting to the Practitioner in the East to note that the "great majority" of the patients treated in the Finsen Institute are "out patients often living in none too healthy homes," and yet one finds on page 322 a list of Tuberculous joints treated there with recovery recorded in more than 70% of each kind of joint.

It seems likely that Actinotherapy, and particularly Ultra-Violet Radiation will be increasingly used in the future and, for a busy Doctor, who desires a thoroughly reliable and exceedingly practical book on the subject, we can fully recommend this work.

P. C.

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PRACTICE OF PREVENTIVE MEDICINE. (SECOND EDITION)

J. G. FITZGERALD, M.D., L.D., F.R.S.C.

The C. V. Mosby Company, St. Louis, U.S.A. Price U.S. $7.50

In this volume we have under the leadership of Dr. Fitzgerald, assisted by Profs. Peter Gillespie and H.M. Lancaster and with Chapters by Drs. Andrew Hunter, A. H. W. Caulfield, J. G. Cunningham and Mr. R. M. Hutton, all of whom are either resident in Toronto or related to the University, a splendid text for the use not only of physicians in the Field of Preventive Medicine but also workers in the Field of Public Health. While prepared especially as a text book for students in Canada, it appears to be well adapted for use as a text book for students even in other lands.

The ground covered in its twenty-five chapters is comprehensive and pointed and useful information can be found on almost all lines of public health work. It reflects the latest trends in thought and of experimental research of the profession, in the order of arrangement of its material. Much more emphasis is given to what may be termed the medical or disease aspects of Public Health than the sanitary or administrative phases.

Its illustrations are ample, consisting chiefly of graphs and records of one sort or another. All hospital superintendents, medical schools, college and University Librarians as well as private practitioners should secure a copy for reference or personal use.

J. H. G.
LIGHT TREATMENT IN SURGERY

Dr. O. Bernhard, (Translated by R. K. King Brown, B.A., M.D., D.P.H.)
Published by:—Edward Arnold and Co., London. Price 21/

This book is a masterly production, being the fruit of thirty years work by one of the greatest pioneers of heliotherapy in the high Alps.

It commences with an historical sketch of heliotherapy the first part of which deals with its extensive employment in ancient Greece and Rome, and is richly embellished with Greek and Latin quotations. No really scientific work appeared on this subject until Doebereiner wrote in 1816. Finsen was the first to use actinic rays for their bactericidal properties in 1890.

The second chapter deals with Light and Light Biology commencing with the physical and meteorological aspects of sun-light. The action of light on animal and vegetable organisms is dealt with at great length, showing much accurate observation on the part of the author in addition to a review of French and German literature on the subject which is calculated to overwhelm the average practitioner.

The third chapter deals with Light Pathology and especially with the so-called "sensitizer illnesses." These appear to be quite distinct from the lesions ordinarily caused by the heat or actinic rays of the sun, in that the action of light is greatly exaggerated either by the presence of some substance such as haematoporphyrin, or by a vitamin deficiency.

The fourth chapter, dealing with Light Therapy, gives a short general account of sunlight therapy both from the historic and present day viewpoints, and short accounts of the various types of artificial light used, with a note on Röntgen Rays.

The fifth chapter, dealing with Climatology, is devoted to a description of the climate of high mountains, not only as regards sunlight, but taking into consideration various other factors which are compared with those of an ordinary lowland or sea coast climate.

After reading this chapter one cannot fail to be impressed with the immense therapeutic advantages of a high mountain climate, and the great difficulties which attend an attempt to reproduce such climatic conditions at a low altitude by artificial means.

The second part of the book deals with special as opposed to general aspects of heliotherapy.

Chapter six gives the indications for sunlight treatment, which may be briefly stated as any type of wound not healing by first intention, whether produced mechanically or by corrosives, the softening of keloids, as a post-operative treatment, as a palliative measure for inoperable growths, and in certain medical conditions. The illustrations are a really remarkable series of "before and after" photographs from a large number of cases.

Chapter seven deals with heliotherapy in surgical tuberculosis, over one hundred pages being devoted to this subject, and another fine series of photographs being given. The greatest triumph of heliotherapy appears to lie in the treatment of surgical tuberculosis, and the author claims a very high percentage
of cures in a wide variety of cases. He frankly admits failure in some late cases where there have been severe complications, such as tuberculous meningitis or miliary tuberculosis.

He advocates both local and general heliotherapy, in contrast to Rollier, who has favoured the full sunbath from the first. As regards operative treatment, Dr. Bernhard stands for extremely conservative measures coupled with heliotherapy for patients who are unable to remain long at his clinic and for heliotherapy alone in the majority of cases where time and money are no object. Heliotherapy should be used only with the greatest caution in specially selected cases of pulmonary tuberculosis.

The writer of this review would like respectfully to suggest to his colleagues in China that more use be made of light treatment. Although the institution in which he is working is little above the sea-level, considerable use is being made of the sun's rays in conjunction with ultra-violet and radiant heat lamps.

S. D. S.

BACTERIOLOGICAL ATLAS

RICHARD MUIR
E. & S. Livingstone, 16-17 Teviot Place, Edinburgh. Price 15/-

The volume consists of a series of coloured plates illustrating the morphological characters of pathogenic micro-organisms and is intended in the first place for the use of students as a companion to the various bacteriological text-books.

The plates are without exception clearly and beautifully printed and the accompanying letter press is just what is required neither too long, a common fault in such works, nor unduly compressed.

The only weak part of the book is that containing a few of the plates dealing with animal parasites. These in some cases leave a good deal to be desired. Through an unfortunate mistake the plates of Tertian and Quartan Malaria are transposed, but this only accentuates the fact that the distinguishing differences are largely omitted. The erythrocytes of Tertian Malaria have three characteristics, increase in size, loss of colour and presence of Schuffner’s dots and none of these are brought out, nor are the large ring forms so commonly seen. The representations of Leishman-Donovan bodies are altogether too diagrammatic as also those of Giardia. Poorest of all are the plates of Entamoeba histolytica and coli. Whether these are accurate representations of amoebae stained with iron haematoxylin we have not enough experience to say; they certainly are utterly unlike anything the student will meet in the iodine preparation that he will use for ordinary diagnostic purposes.

It seems hardly fair to call so much attention to a few failures in the midst of so much valuable material and we would insist that it is only the all round worth of the book that makes these prominent. We trust that an early call for a second edition will give the needed opportunity for replacing the few weak plates.

In a country where teaching a foreign science is none too easy, a work of this kind is of the utmost value.

J. L. M.
A book that can boast the names of Sir Frederick Treves and Professor C. C. Choyce on its surgical side and that of Sir Arthur Keith on its anatomical side needs no better recommendation. This book has now reached its eighth edition besides twenty two reprints which is another proof of its usefulness. The reader should however not expect to find an exposition of surgical procedures nor should he expect to find descriptive anatomy, but he will find a great many anatomical facts stated in their relation to surgical diagnosis and treatment in a most helpful way.

The man who used to know his anatomy but whose knowledge is getting more or less hazy will here find the essentials brought back to his mind without the unnecessary details.

The senior student will find the book a help in revision of both anatomy and surgery, but he will not find a "cram book" from which to learn these subjects.

The teacher of anatomy, who is not fortunate enough to be able to gather his own surgical experience by which to illustrate his subject, will find this book quite a storehouse of ready made examples, and the teacher of clinical surgery will find the anatomical details he needs ready to his hand without having to wade through one of the large text books of anatomy.

It would seem that the text is worthy of more numerous and more elaborate illustrations, but those that are there do in a diagrammatic way make clear what they are meant to illustrate.

The wide reading and great knowledge of the authors have been made available to the reader in a concise and useful manner.

P. N. P.

A MANUAL IN PRELIMINARY DIETETICS

Maude A. Perry, B. Sc.
C. V. Mosby Company.
Gold, $1.25.

This little manual, the outgrowth of lectures given in the department of Dietetics in the Montreal General Hospital, is neat, short, concise, clear and readable.

If there were any suggestion as to the arrangement of material, we might say that the recipes, with which the manual abounds might have been made a little fuller as to the question of directions to the student. One also looked for a table of food digestion time. Carbohydrates are stressed in the subject matter, while Proteins have a very minor place in the manual, even while they are essential in hospital diets.

In chapter 8 on "Meats" one wonders if the author means that meat should hang to ripen for several weeks? or if this is a printer's error and the
word weeks substituted for hours? If meats are to hang for any length of time they should be in a refrigerator. And in the chapter on frozen desserts, and foods, one looked in vain for some mention of modern refrigeration methods, even a short note on these would make the work more valuable, as no hospital kitchen is complete without them to-day.

As well as being of value to nurses in training, the manual will also fill a need in the home, used by the mother, as the receipts are timely and well adapted for home use. Any teacher of Dietetics in China will find this little volume an addition to the library, and all schools of Nursing could well add it to their libraries.

W. C.

HOSPITAL HOUSEKEEPING AND SANITATION
Nora P. Hurst, R. N.
C. V. Mosby Company.
Gold, $1.25

Hospital Housekeeping and Sanitation is a vade mecum multum in purvo on the subject which it presents. The booklet is crammed full of facts, put very tersely and plainly, upon the topics of the manual.

While there are many portions of the text which are not applicable to our work in China, still there is more than sufficient to make it a worth while book for teachers in training schools and nurses in training.

The material is well chosen and clearly dealt with. The arrangement is good and there are no tedious explanations nor descriptions. W. C.
The China Medical Journal.

Correspondence

Stovarsol

Peking Union Medical College

May 16, 1927.

The Editor,
China Medical Journal,
23 Yuen Ming Yuen Road,
Shanghai.

Dear Sir:—

In the correspondence section of the March number of the "Journal" appears a letter addressed to you on stovarsol poisoning from the Shanghai representatives of the manufacturers of this drug, Les Etablissements Poulenc Freres. The letter states "our laboratory has examined the P.U.M.C. report on stovarsol", but it does not give any details of the report nor does it say that the report was a confidential report sent by Dr. Meleney to their Peking representatives, Brunner, Mond & Co., at their request. Any criticism of the report should, of course, have been made directly to Dr. Meleney in the first instance and not to the Editor for publication. In a letter accompanying this report Dr. Meleney asks that the manufacturers let him know the conclusions arrived at by them. This letter in the "Journal" is the first acknowledgment of the report which has come to Dr. Meleney. In point of fact, the report was a very brief outline of what happened in the cases concerned. Further information in detail could have been supplied in conference with the manufacturers.

Aside from the irregular method of dealing with the question, the letter contains statements in regard to the report which are not true to fact. Since the report has not been published there is no object in entering into this question in detail. Suffice it to say that Dr. Meleney's report was distorted and interpreted to make it appear that proper attention was not given to the history and care of the patients, a public accusation of professional negligence which is not in keeping with the China Medical Association's code of professional ethics.

The writer of the letter finally admits that arsenic poisoning does occur from the use of stovarsol, but he does not state that caution should be used in the administering of the drug in the dosage employed in three of our cases, including one fatal case. The point of Dr. Meleney's discussion of Dr. Morgan's paper in the China Medical Journal of November 1926 was that caution should be used in using ordinary doses of the drug and that it might be desirable to limit courses of treatment more than has as a rule been advocated in the past. The manufacturers' letter makes no reference to the reports of intoxication in Dr. Morgan's cases and the literature contains further instances of intoxication with usual doses.

I have neither the desire nor the intention to enter into a controversy on the subject of the toxicity of this drug, but I wish to take the opportunity to point out errors of statement with regard to Dr. Meleney's report as well as of interpretation of it. Furthermore, I feel that misuse of the correspondence section of the Journal has been permitted in allowing a commercial firm to misstate and misinterpret the facts given in an unpublished report, and to make an unsubstantiated accusation against members of the medical profession.

Yours very truly,
F. R. Dejaide.
Professor of Medicine.
The Editor desires to express his deep regret that the letter referred to above found a place in the pages of the Journal and his apologies, especially to Dr. H. E. Meleney, for the entirely unfair methods used by the writers and the discourtesy thus shown to him. Needless to say had the Editor had the slightest inkling that the criticism referred to anything but a published report he would not have allowed it to appear. The fact remains that whether the Editor was to blame or not the pages of the Journal have been used for a method of controversy which is abhorrent to all right minded persons.

Further reference to this is made in Editorial Notes for this month.

Public Health Appointments in the United States.

61 Broadway, New York

April 15, 1927.

Dear Dr. Maxwell:

In view of the fact that some medical missionaries are likely to be returning to the United States from China on account of the disturbed condition there, it has occurred to me that some of them may be interested in considering public health work as a career.

A successful medical missionary usually possesses some of the qualities needed for a public health officer. He is interested in opportunities to make his life as useful as possible, and would naturally regard financial compensation as a secondary factor. Medical practice in China usually gives him a wide range of clinical experience, which is of value to the health officer, and finally it often impresses on the physician both the need of preventive work and the great economy of effort secured by preventing disease instead of waiting to deal with it only by treating the sick.

If any of the younger and well qualified medical missionaries for whose ability you can vouch are interested in investigating the opportunities in public health work in the United States, I would suggest that they communicate with the Rockefeller Foundation, whose officers occasionally know of vacancies in state and county health departments and would be glad to give any available information about such positions.

In some cases the state health executives are able to suggest to prospective appointees means for securing sufficient preliminary experience to qualify them for official positions.

Opportunities for medical men are frequently presented in advertisements in the Journal of the American Medical Association and in the Journal of the American Public Health Association. In almost every issue notice will be found of vacancies in hospitals and other institutions as well as in public health organizations.

Yours sincerely,

Roger S. Greene

Economy in Drugs.

556 Avenue Haig
Shanghai.

June 12, 1927.

The Editor,
China Medical Journal

Dear Sir,

Dr. James L. Maxwell has no occasion to deprecate his criticism in your April issue of my recent contribution on "Economy in Choosing Drugs", as it serves to make clearer several of the principles involved.

I had suggested that as stomachics or bitter tonics two tinctures, gentian and calumba, should be sufficient for the ordinary missionary hospital pharmacopeia, and that in addition to these, say, one syrup and three or
four essential oils should be enough for all flavouring purposes. Each superintendent in a one-man hospital, or each group of doctors where there are more than one, would naturally choose very carefully and thoughtfully those particular tinctures, syrups, and oils which they found most widely and generally useful. Personally I use syr. aurantii; but if Dr. Maxwell found it served better to substitute tr. aurantii for this or for one of the above tinctures, or to add it as a third tincture, he would naturally do so. Individual judgement has plenty of scope—indeed is most essential—for such a system as I have outlined; but I have urged that it should be exercised according to the principles enunciated, and should be deliberately used in missionary hospital work to restrain the lavish and fanciful inclinations that are apt to influence us at times.

One principle I would enunciate again in reply to Dr. Maxwell's question. Though the number of drugs which may be of value is legion, yet in the average mission hospital pharmacopœia there should be no place for any except those of proved and undoubted efficiency towards the purpose for which they are used. This does not exclude the conception of clinical proof, though that is by no means such a simple matter as we are apt to imagine; neither would it apply to some one or more drugs whose action a doctor was deliberately setting himself systematically to investigate.

Capsicum will in some districts be one of the few exceptions to the principle that it is not worth while at present wasting time and trouble in trying to use crude Chinese drugs: but the principle holds.

Quassia would be kept in the form of the fluid extract, portable, highly concentrated, and not expensive; and from this a therapeutic preparation practically equal to the B.P. or U.S.P. infusion can be extemporaneously prepared at any time.

It is a good suggestion of Dr. Maxwell's that in some cases it would be an economy and advantage to dilute fluid extracts down for use as infusions rather than as tinctures. On the labels of fluid extract bottles issued by Parke Davis and some other manufacturers directions are printed for both methods of dilution. There is also a growing tendency to prescribe simply minim doses of the fluid extract in the case of many drugs instead of either of the above forms of preparation.
Obituary.

Gershom Whitfield Guinness
Medical Missionary to China
1897—1927.
Died in Peking from Typhus Fever, April 12 1927.
An ardent evangelist, a physician beloved, Guinness gave thirty years of his life to China.
He came to the field not long before the Boxer outbreak of 1900 at which time he passed through peril and privation. He returned to his work in Kaifong after furlough at the end of 1925, not long before the political upheaval of 1927. It was indeed at the very moment of evacuation that he was stricken with the fever that revealed itself as typhus on the journey to Peking, and proved fatal within ten days from its onset in spite of every care and attention at the P.U.M.C.

Guinness' service was ever marked by enthusiasm and a self-effacing willingness to meet the present need.

Whether pioneering at the inception of the medical work in Honan, whether helping forward the cause of Public Health in later years, whether participating in Church work or taking his share in the regular hospital routine there was always the ready response to fresh opportunities for the service of his fellows. Moreover Guinness always turned such opportunities to good account for the Gospel.

Just a day or two before he had to give in and take to his bed he spent a long while by the bedside of a wounded officer, preaching Christ to him. The following morning this man told the writer, who was going his rounds, how Dr. Guinness had sat beside him and explained the Scriptures, and how, as the doctor talked, his pain had passed and peace had come into his heart. Thus it always was with Guinness—"Apt to teach, fervent in spirit, serving the Lord."

D. M. G.

News and Comments

The Journal—Continued difficulties in the matter of publication have again delayed the issue of this copy of the Journal. We hope that we see our way clear now although a change of publishers has become necessary. It is however likely that two or three months will still elapse before we quite get back to the proper date of issue. In the meantime we hope that each month will see us nearer to that objective.

Dr. W. S. New—By the time this appears in print Dr. Way Sung New and Mrs. New will have left on a trip to America and England where Dr. New is planning to visit various centres and study new methods of surgical practice.

The heartiest good wishes of all the members of the Association will go with Dr. and Mrs. New on their journey, together with the promise of a very hearty welcome on their return.

Dr. New is not only a prominent member of the C. M. A. but a very valued member of its Executive Committee. His advice on many difficult problems during the present critical period has always been most highly valued and he combines with it so attractive a personality that he may be described as a universal...
favourite. While it is impossible to grudge so hard a worker a well-deserved holiday there are few indeed who can be so ill spared at this juncture.

Dr. George E. King—It is with very deep regret that we have to record the death of another of our members under tragic circumstances. Dr. George E. King was drowned in attempting to free a raft, carrying members of the mission party, which had become caught on rocks in the river on the journey down from Kansuh. Dr. King was one of the two doctors in the much neglected province of Kansuh where he was in charge of the Borden Memorial Hospital, the only hospital in China for Moslems. We hope to publish a fuller notice of Dr. King's life and work in the next issue of the Journal. Dr. King was a keen observer and has contributed on several occasions to the C. M. J. In the current issue some notes from a personal letter to the Editor are published.

Dr. T. M. Li—Dr. T. M. Li, formerly Associate Professor of Ophthalmology in the Peking Union Medical College has now settled in Shanghai where he is taking up special practice in Eye, Ear, Nose and Throat work. Dr. Li has been appointed as visiting Professor of Ophthalmology to the Pennsylvania Medical School of St. John's University. His address is 25 Jinkee Road.

Insulin—With the approval of the Medical Research Council, Burroughs Wellcome & Co. are now prepared to supply "Wellcome" Brand Insulin 200 units in 5 c.c. in addition to the regular strength of 100 units in 5 c.c.

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

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

Izal—We note that Izal has been adopted as an official Government disinfectant in Japan and Korea.

How Not to Advertise—Circulums advertising drugs usually find a speedy exit to the waste paper basket. Just occasionally they are prized for their help in whiling away a dull minute. The following extract from such a circular is among the best we have seen for a long time:

"In case of fits take three tablespoonfuls a day as long as the fit lasts, no matter how long. Then a cure every month."

The length of the fits doubtless explains why a cure is not a cure.

The pity of it is that the preparation, for which we do not propose to give a free advertisement, is really a very valuable one and advertised in a reasonable manner might profit both the advertiser and the public.

Lapnus—"Lapnus, a mysterious and rare disease, has reappeared in the Philippines. The cause and symptoms of this sickness are still unknown. The disease looks like yaws, but has symptoms of malaria. In some cases the spleen of the patients wells. In 1925, this disease caused several deaths in the island of Mindoro."

The above appeared recently in the leading daily paper in Shanghai. Can any of our readers tell us what "Lapnus" is?
News and Comments.

NEW MEMBERS PROPOSED

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<th>Name</th>
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<td>Bolton, Ralph</td>
<td>M. R. C. S., L. R. C. P. Lond. W. M. S. S.</td>
<td>Anlu, Hupeh</td>
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<td>Dr. H. Owen Chapman</td>
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<td>Dr. Sarah C. Wolfe</td>
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<td>Yew, Hon-Ping</td>
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<td>Hsueh, Walter S.</td>
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<td>Veldman, Harold E. M.D., Detroit</td>
<td>R. C. A.</td>
<td>Tungjen, Fukien</td>
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<td>Dr. C. H. Holleman</td>
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<td>Dr. R. Hofstra</td>
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| Gillison, Keith H. M. B., Ch. B., F. R. C. S. E. (Edin) | L. M. S. | Shanghai, Ku.
| Proposers             |                         |                     |
| Dr. A. C. Price       |                         |                     |
| Dr. Henry Fowler      |                         |                     |
| Liu, Lansing S.       | M. D., Hunan-Yale W. M. M. S. | Pingkiang, Hunan   |
| Proposers             |                         |                     |
| Dr. E. C. Faust       |                         |                     |
| Dr. Kefang Yao        |                         |                     |

NEW MEMBERS ELECTED

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<td>Dr. P. B. Price</td>
<td>P. S., Soochow, Ku.</td>
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<td>Dr. H. E. Thelander</td>
<td>Aug., Hsuchow, Ho.</td>
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<td>Dr. P. C. Chan</td>
<td>Canton, Tung.</td>
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<td>Dr. T. D. Lee</td>
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<td>Dr. H. C. Wesche</td>
<td>N. H. M., Tungchang, Sung</td>
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<td>Dr. L. N. Jeu</td>
<td>Canton, Tung.</td>
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<td>Dr. D. Faulkner</td>
<td>P. C. I. Peking.</td>
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NOTICE

THE KAILAN MINING ADMINISTRATION propose to appoint a lady Matron at their Tongshan Chinese Hospital, who shall have charge of the training of nurses for the Administration's Medical service (200 beds). Applicants, who should preferably be British, must speak fluent Chinese, and have considerable experience in training nurses for the Curriculum of the China Nursing Association. For particulars, and re salary, leave and other emoluments apply to the Medical Superintendent K. M. A. Hospital Tongshan.