LEPROSY

The Problem of its Eradication from China*

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The aim, I take it, of a paper read at a Conference such as this should be to place the main proposition before you in such a form that it shall be neither tedious from excessive length nor on the other hand a mere narrative of facts and tables with little human interest and both of these errors I shall attempt to avoid. The greater risk is perhaps the former of these for the literature on leprosy dating back for at least 4000 years covers a disease so filled with human interest and tragedy that the danger of being prolix is large.

To avoid this, I shall deal with the subject under a few principal heads only.

1. Mainly Historical

The disease of Leprosy all over the world is a very ancient one and of its beginnings we have no records. We know that among the Jews it existed and was apparently common four thousand years ago. Here it would be well to note, however, that the term leprosy in the Old Testament probably included a number of other diseases under the same name which had no relation to leprosy as we now know it. This is not surprising for medical diagnosis was then in its infancy and even now in the province of Fukien a general term thai-ko is used which, for the people at large, includes many conditions which have no connection with leprosy as defined by the medical profession.

*Read at the opening of the new Science Building, Lingnan University, Canton, 19th October 1928.
In Chinese one of the first references to leprosy is in the "Wars of the Contending States."* A passage in that history says Yu Jang painted his body with varnish to represent a leper, and removed his beard and eyebrows, punishing himself in this way to change his appearance.

This he did to disguise himself with a view to facilitate his assassination of an enemy who had killed his feudal chief, ruler of Tsin.

The enemy was T'sau siang tsi, ruler of the T'sau feudal state, now T'sau-chow-fu, where Shantung borders on Honan.

This passage is given in the Pei wen yun fu. It is followed by a passage from the Li ki. In the calendar of the seasons (Yue ling) contained in this work, it is said that "if in the middle month of winter the proceedings of government proper to spring were observed, locusts would appear and work harm, springs would all become dry, and many of the people would suffer from itch and leprosy." ........

This calendar is also found in the Ch'un T'sieu of Lu Pu Wei, whose work dates from the third century before Christ. But the commission of learned men who wrote for Lu Pu Wei used Chow phraseology and Chow documents, as in the way they speak of the feudal barons, who must have been still in existence. We may regard this calendar as very much a Chow Dynasty production. It recognizes the emperors of antiquity. It speaks of the Empire as consisting of nine Provinces. Further, this ancient fragment gives the place of the meridian stars at an interval of fifteen degrees in advance of the point where they are stated to have been observed by the ancient astronomers. For instance, in the Shu king, Hu (a star in Aquarius) is said to have been the meridian star at evening twilight in September. In the Yue ling it is the meridian star at evening twilight in October. But the stars move at the rate of 50 seconds in a year, or a degree in 72 years. They move, therefore, fifteen degrees in 1,080 years, and this position of the star Hu in October agrees, therefore, with the age of the commencement of the Chow dynasty, or about B.C. 1100. Consequently this testimony in regard to leprosy may possibly

*These historical notes are largely taken from a paper in the China Medical Missionary Journal, March 1891 by the Rev. J. Edkins, D.D.
go back as far as the time of Chow Kung (B.C. 1100). Yet while the astronomy is that of this date, the book as a whole is more likely to belong to an age some centuries later, because the "five emperors" are mentioned as being worshipped, and the mythology has the appearance of being that of about the 9th century before Christ. We may then at least say that leprosy was probably known in China in the age of the later classics, two or three centuries before Confucius, and was dreaded as a calamity sent to punish moral evil.

In the Shi ki history there is a case of a prince named Siang who received the title of Marquis Yi. He became a leper and had to go home after resigning his command. This was about B.C. 150. He lived as a leper about 23 years. This took place in Shantung, in T'sau-chow-fu.

In the Old History of the Pang dynasty it is said that a woman of T'sau chow in Shantung professed to have communications with demons and with nature, and to be able to cure diseases through these communications. Many lepers came to her for cure and were healed.

In the time of Confucius one of his own pupils (Pe nieu) was a leper and died of this disease. He is mentioned in the Lun yu. This incident belongs to Shantung in the 5th century before Christ.

Coming down to the fourth and fifth centuries after Christ we find traces of leprosy in South China and in Cambodia. In the country near Soochow a somewhat conspicuous character named Chow hing si became a leper. In his case white swellings appeared first on his hands. After this, continues the account, he contracted leprosy, and his left eye was soon gone. The emperor touched his hand and sighed, saying, in the words of Confucius, "Such a man to have such a disease." The emperor then with his own hand wrote a prescription for white tumour, and gave it him.

"In Cambodia" it is said that "many lepers are found. The people do not avoid them or refuse to eat with them or even to sleep with them. The reason of this is said to be that the ruler of the country in one instance was a leper, and the people ceased, on this account, to feel dislike to it." This is taken from a book on Cambodia, written at the time when the Chinese Empire usually embraced that country.
The Tanists professed to be able to cure leprosy by charms. In the Catalogue of the Sui dynasty library there is the name of a volume on the cure of leprosy by a charm said to have been found in the case of Lau Kiun. This was in the 6th century.

Leprous baldness is mentioned in the Lieu History. In Eastern Tibet, adjoining the Province of Kansu, there was formerly a great love of revenging injuries. When there was a time of mourning it was not right to strike anyone. People wore a coat of mail, having a border as a sign. When enemies were reconciled, the blood of fowls, dogs and pigs was mixed with wine. This compound was stored in a skull, for drinking at the time of taking an oath. The oath was administered with the words:—If you should again revenge yourself on such a person, may your grain be unproductive, may your sons and daughters be bald with leprosy, your cattle die, and serpents enter your tent.

In the Shen yi kiang (Book of Marvels), of about the fifth century, a cure for leprosy is mentioned: "The shoots of the weeping bamboo, ti'chu, if eaten will cure ulcers and leprosy."

In the sixth century there is a story of a city magistrate whose court-house was burnt down with his dwelling. He took refuge in a monastery, and an ox and some wine were brought by the inhabitants of the city as presents. The magistrate ordered the ox to be tied up to the pillar in front of the monastery. He then caused a dais to be prepared, and sat in his official robes in the hall to receive guests. The ox, loosening the rope with which he was led, came across to where the magistrate was sitting, and made a bow. The magistrate laughed loudly, and at once ordered his attendants to slaughter the animal. After a hearty meal and deep potations, he lay down under the eaves to take rest. After a time he woke up with frightful sensations of itching. Scratching was useless, for he had become a leper.

It would appear that leprosy reached China from India, and that the south-eastern coast regions of this country were first affected. This would naturally be the case as even then sea trade existed with India.

While in the intervening centuries the disease has advanced as a rule but slowly, there appear to have been times when leprosy took on an epidemic form and spread quite rapidly, as happened also in the Middle Ages in Europe.
II. Distribution of Leprosy in China

The disease is very wide spread over China but the difference in its relative frequency in different parts of the country is very striking. Manson for the Amoy region (Fukien) estimated it at 1 in 450 of the general population. Wong put the number of lepers in Kwangtung at 10,000 but this must be greatly underestimating the total of lepers in the province. Dudgeon for Shantung 1 in 1,000. Barbeyieux gave the numbers for Yunnan at 1 per cent of the population but this must be a gross exaggeration. We have also reports of the disease with greater or less frequency from the Provinces of Chihli (Hopei); Manchuria especially among Shantung and Korean immigrants; Kiangsu where my own experience leads me to think that it is much more common than is generally supposed; Chekiang; Anhwei; Hupeh; Szechuan, especially among coolies and labourers from Yunnan; Kiangsi; Kwangsi and Kansu especially among Thibetans near the Thibetan border. It is evident, therefore, that the disease is very common and the total of lepers in China must run into hundreds of thousands.

It has been frequently stated that leprosy is confined to the southern provinces, the north of China being free from the disease. This is not the case as the foregoing paragraph shows. Apart from Shantung, parts of Manchuria, and Korea, however, it would appear to be generally true that leprosy is relatively rare in the north of China, as compared with the south.

III. The Eradication of Leprosy in Western Lands

Before considering the problem before us of ridding China of leprosy it were well to see what lessons can be learnt from the eradication of leprosy from other lands.

It is a well known fact that leprosy was a common disease in Europe generally, and in England, a few centuries ago. For practical purposes it has entirely ceased to exist in these countries though in a few isolated areas it has not quite entirely died out.

It is equally certain that only two factors contributing to this, need be seriously considered. These were the improvement of economic conditions and the isolation of lepers. For many years a fierce dispute has raged as to the relative importance
of these facts in ridding Western Europe of leprosy. As it appears to me the isolation of the lepers probably started the process of eradication and this was completed by the raising of the economic conditions which alone is responsible for the prevention of the further development of the disease or its possible spread now in these countries.

IV. The Factors in the Problem of Ridding China of Leprosy

The factors just mentioned must now be considered in detail in relation to this country and to these we can happily add a new factor that of the cure of the disease which of recent years has become of growing importance but which had nothing to do with the eradication of the disease from Western Lands.

Economic Conditions. Leprosy is undoubtedly a dirt disease. It is the poor, the illiterate, the submerged tenth of the population that suffer principally from leprosy. This does not mean that the wealthier classes are unaffected by it; for with the constant presence of a nidus of disease among the poor, it is certain that from time to time the infection will rear its head to attack also those of a higher social scale.

The mode by which infection is carried is still quite undetermined but it is clear that it is neither a hereditary nor a familial disease and the cases where husband and wife become lepers are strikingly few. Yet to rooms, and more particularly to clothing, the materia morbies does seem very definitely to cling. Cleaner houses, cleaner surroundings and clean clothing would mean the death knell of leprosy, but these are hardly possible in a population where the line between normal and actual starvation conditions is so fine a one as is the case over a large part of this country. Improved economic conditions are an essential to the eradication of leprosy.

Isolation of lepers. We have acknowledged already that the isolation of lepers has been a factor of some importance, though possibly exaggerated in value, in eradicating the disease from Western lands. Is this a factor which might help to rid China of leprosy? I have no hesitation at all in saying that in the twentieth century measures of segregation are of no value whatever in this disease. Indeed, I would strongly maintain that such measures strictly carried out are now more likely to assist in spreading leprosy than in eradicating it.
In the segregation systems of the West the sole concern was for the community at large, no regard whatever was paid to the individual leper. Any measure therefore, however inhuman towards the individual, was considered justified for the sake of the community. He was driven out without mercy and without consideration for himself or his family, regarded as dead and indeed in places, as in England, the service for the dead was read over him at the time of his expulsion. This though terribly cruel was absolutely logical, for once any attempt had been made to make provision for the leper, contacts would have been established which it was the main object of the law to break. What success the laws against leprosy had was largely due however to the fact that the bulk of the people lived in isolated villages. Large towns and cities were few and means of travel were, for the bulk of the population, completely absent. Every person in every village knew every other person while the towns themselves were seldom large enough for a stranger to remain hidden in. It is therefore, evident that a leper once expelled from a village had absolutely no chance of returning to it, could hardly remain hidden in a neighbouring town if there were such, and as travellers were few, would as a stranger be suspected even on the roads.

Such a system would be impossible almost anywhere in the world to-day and certainly so in China. A more enlightened generation would revolt entirely against the cruelties of the old leper laws of Europe and would make their enforcement impossible. But were this not so, increasingly easy travel by road, rail or water would enable the leper to find a hiding place in other districts or in cities without any serious difficulty and so spread rather than limit the disease.

To a further and still more serious objection reference will be made under the subject of cure, but before leaving this subject of segregation I desire to point out the utterly illogical position that its advocates are compelled to take. No attempt is made except for leprosy at isolation of any chronic infective disease in any part of the world. Acute infections may be compulsorily isolated because they are prostrating and quickly over, but this cannot be done with chronic infections, even typhoid carriers who are a constant and acute menace and few in number cannot be compulsorily segregated in any State.
The truth is that in relation to lepers and leprosy there is a condition of nearly world-wide and acute hysteria which will stop to consider neither reason nor logic. The very closely allied, infinitely more infectious and much more rapidly disabling disease of tuberculosis is regarded by the population as a whole with comparative equanimity and any attempt at segregation of this disease would cause a revolution in any country; whereas the same people will hysterically demand the complete segregation of lepers.

Cure. But a third factor and a very important one has of recent years been introduced into this question. The cure of leprosy is a definite and increasingly important fact. Let us be quite clear what we mean by cure because the word is unfortunately being used in a quite unwarranted sense. The pathologist demands as the standard of his cure the elimination from the body of every bacillus of leprosy. He is perfectly right from his point of view but he is not using the word in its ordinary sense. We really are in need of a new word to apply to this and certain other diseases, for at present there is considerable confusion in terms which does not make for exactitude.

Let us take again the closely allied disease, Tuberculosis, where a similar confusion exists. We speak often of Nature's cure of tuberculosis. What do we mean by that and what is the condition of a person so cured? The answer to such a question can only be that the natural reactions of the patient's tissues have been so stimulated that the tubercle bacilli in his lungs or elsewhere have been deprived of their power of invasion of the tissues, have been surrounded by dense capsules of fibrous tissue, and thus been isolated from the general system and rendered innocuous and the patient to all intents and purposes is well. We speak of the patient being cured and rightly so, for he is once more able to take his place in the general life of the nation on a physical equality with his comrades. But from the pathologists point of view this is no cure at all. Bacilli are still present in the body and given circumstances of very exceptional strain, the defence reaction may break down and the bacilli again become active. Exactly the same is probably true of some cases of cancer, and accounts for recurrences after many years immunity following an operation.
We have therefore two standards of cure, that of the
practising physician and the general public, and that of the
pathologist, and with the subject of this paper in view we ought
to have a clear definition of what we mean by these two. I
would suggest something of this kind.

Cure, in the ordinary sense, is when a patient is free from
active infection, is no longer a menace to others and can resume
the ordinary avocations of life with apparent normality.

Cure in the sense of the pathologist is when every living
germ of the disease is eliminated from the body. Undoubtedly
this does occur, though comparatively seldom in diseases such
as tuberculosis, leprosy and cancer, but at all times it is extreme­
ly difficult to prove in the individual case.

Now what standard are we to set up for the cure of
Leprosy? Evidently the first and not the second. To me it
is absolutely absurd to demand in the proof of cure the digging
into various odd viscera with a needle and syringe to see if
a bacillus can be recovered therefrom. Let us be people of
common sense in our views of this matter, and not be too much
carried away by the demands of the specialists.

For a cure I ask only the complete absence of active disease
from the body and an absence of infective material from the
secretions. Such a person should be regarded as cured, and
let recurrences if they do occur, and as they will occur occasion­
ally in diseases such as tuberculosis and leprosy, be treated as
fresh outbreaks of the disease.

I am afraid I have dealt with this matter at considerable
length but the great importance of a common standard for cure
has made this rather necessary.

We return now to the factor of cure in the eradication of
this disease. In what proportion may such cures be effected?
This is a matter as we shall show of supreme importance.
Time will only allow me to give the impressions derived from
the writings of those who have given themselves most
assiduously to this work. These are that in quite early cases
practically every patient should be cured but that the possibility
of cure diminishes in proportion to the length of the disease.
Yet in cases of 8 years standing the percentage of cures should
still be from 15 to 20, and the percentage of definite improvement should be much larger.

We may safely draw two conclusions from these figures.

1. That it is supremely important to secure treatment for the early cases and at the earliest moment possible.

2. That every case however advanced should be given the chance of treatment.

And it follows from this that if all cases could be treated the disease would in a few years be completely eradicated.

Now, this has a tremendous bearing on the question of segregation. Segregation can only be complete as regards the advanced and evident cases of the disease. If segregation is compulsory and keeping in view the feelings of the lepers themselves in regard to this, practically all the very early cases will escape. For nothing is easier to hide than the early macules or the commencing numbness in a nerve case.

I maintain that with the new weapon of cure at our command, compulsory segregation defeats its own ends and becomes a menace rather than an aid in eradicating the disease.

V. Practical Suggestions

In closing I should like very briefly to outline what seems to me to be the way in which the leprosy problem might be tackled.

1. Segregation of advanced cases. This is entirely a different proposition to any of wholesale segregation of lepers. The advanced cases, especially those with ulcerating lesions, are a danger to the community and a misery to themselves. There could be little difficulty in, and little objection to, their segregation. While private charitable enterprise can do something to help much must depend on Government action in accomplishing this.

2. Hospitals for treatment. These must be entirely separate from the places where advanced cases are segregated.
Early cases will practically never come to the latter and the attempt to combine these with treatment centres is foredoomed to failure. It is probable in the first place and until the value of treatment is more widely known and practically demonstrated that these will have to be established by private enterprise.

3. **Follow up work.** Rogers maintains that, I think it is 80 percent of the cases of leprosy are the result of house outbreaks. By this I mean that new cases arise in relations and dependents from houses where cases have already occurred. He suggests that if all the inmates of such houses were periodically examined every six months for a period of a few years, all new cases would be found very early at a time when treatment holds out an almost certain hope of cure. In this way the bulk of the disease might be eradicated in the course of a few years and by following the same plan in connection with new cases arising elsewhere, the disease would decrease with great rapidity and finally disappear. Doubtless, this is not a plan that could be generally adopted at present, but in certain localities this might be possible and as a demonstration of the possibilities would be of very great value.

4. **Notification.** While general segregation is neither desirable nor possible, the notification of early cases and enforced treatment of the same would make the task of ridding China of leprosy a comparatively easy one. At present, there are but few districts where this would be possible, but there is a beginning being made of the appointment of enlightened health officers in some of the cities and where these men are, notification might be gradually enforced.

5. **Education.** Lastly, much has to be done in the way of education. Both the Government, the people generally and Mission Homes have adopted the view in the past that leprosy is incurable and so have put out little effort in the way of treatment. All these Bodies have got to be educated into the knowledge that leprosy is eminently curable in the early stage, is amenable to treatment in a rather later stage and that even in an advanced stage many may be improved and a small proportion of these actually cured. Till this is appreciated and acted on there will but little wide success in leprosy eradication.
THE KAHN REACTION IN LEPROSY

A Study of 167 Lepers in Swatow District*

DANIEL G. LAI, B.A., M.D., SUCHEN WANG LAI, B.S., M.D.

I REVIEW OF LITERATURE

In making the diagnosis of leprosy and giving treatment, it is of great importance to exclude syphilis. "Unfortunately," stated Manson-Bahr in the new edition (1926) of his well known text book, Manson's Tropical Diseases, "the Wassermann Reaction can not always be relied upon as a guide in differential diagnosis (between leprosy and syphilis)." The author supported his view by the report from India (Lloyd, Muir and Mitra). According to these workers, a positive Wassermann Reaction was found in 41.7% of their 228 leper adults, and 62% of their 58 leper children. While the syphilis rate of the Indian population was calculated at about 14%, these figures suggested that commonly leprotic serums give a positive result. However, in a recent paper (1928), by adopting Kolmer's new Wassermann technique, Lloyd and his associates seemed to have changed their opinion, and they reached the following conclusion:

"The question as to whether leprosy will yield a positive Wassermann Reaction is settled in the negative, provided syphilis be absent and a wide gap Wassermann technique be used."

Since the discovery of a precipitation test for syphilis by Kahn in America, and the recognition of its superior features over the Wassermann Reaction, this new test has become more and more popular. The same investigators in India are now experimenting with this test, and according to their statement, actual results in leprosy, though yet few, have been satisfactory. Research of this nature has been also carried on in the Philippine Islands and some other countries where leprosy is prevalent, and their findings may be summarized in Table I.

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*Aided by the Research Fund of Hopo General Hospital, Hopo, Kwangtung.

From the Josephine Bixby Memorial Hospital, Kityang, Kwangtung.
Table 1. The Kahn Reaction in Leprosy.

<table>
<thead>
<tr>
<th>Country</th>
<th>Place</th>
<th>No. Lepers tested</th>
<th>Positive</th>
<th>Per Cent Positive</th>
<th>Authors</th>
<th>Year of Publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>P. I.</td>
<td>Oulion Leper Colony</td>
<td>250</td>
<td>36^</td>
<td>14.4%</td>
<td>Pinedas</td>
<td>1926</td>
</tr>
<tr>
<td>P. I.</td>
<td>Manila</td>
<td>100</td>
<td>&quot;Generally negative&quot;</td>
<td>Argüelles</td>
<td>1926</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>Shillong</td>
<td>112</td>
<td>25</td>
<td>21.9%</td>
<td>Gravai</td>
<td>1928</td>
</tr>
<tr>
<td>China</td>
<td>Swatow District</td>
<td>167</td>
<td>21</td>
<td>12.5%</td>
<td>Lai's (Present paper)</td>
<td>1928</td>
</tr>
</tbody>
</table>

II. Our Investigation in China.

Leprosy is a very prevalent disease in China, especially in the Kwangtung Province. On the basis of the Indian findings, Fowler, an authority on leprosy in China also stated in 1924 that the Wassermann Reaction is positive in a large proportion of apparently non-syphilitic lepers. Because of its complicated technique, many of our Chinese leper colonies are not equipped with the Wassermann Reaction, and therefore actual results with this test in leprosy are not obtainable.

Our previous pleasant experience with the Kahn Reaction led us to apply the same test to our lepers in the Swatow District. In a series of 167 cases collected from the Kityang Hospital, the Swatow Mission Hospital, and the Swatow Municipal Leper Colony, we found 21 or 12.5% giving a positive result (see Table 2).

Table 2, showing Number and Percentages of Positive and Negative Kahns.

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>21</td>
<td>12.5%</td>
</tr>
<tr>
<td>Negative</td>
<td>146</td>
<td>87.5%</td>
</tr>
<tr>
<td></td>
<td>167</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Through brief inquiries and examinations, 7 or 33.3% of the positive cases were clinically diagnosed as syphilis. It is significant to note that in comparing the above percentage of

*28 cases were clinically positive for yaws or syphilis.
the positives (Table 2) with the syphilis rate (13.5%) of our non-leprous patients (see elsewhere in this issue), both figures were quite close.

**TABLE 3, showing the Degree of Reaction.**

<table>
<thead>
<tr>
<th>Degree of Reaction</th>
<th>Number</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ + + +</td>
<td>9</td>
<td>42.9%</td>
</tr>
<tr>
<td>+ + +</td>
<td>7</td>
<td>33.3%</td>
</tr>
<tr>
<td>+ +</td>
<td>4</td>
<td>19.0%</td>
</tr>
<tr>
<td>+</td>
<td>1</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

**TABLE 4, showing Number and Percentages of Positive and Negative Kahns with reference to types of Leprosy.**

<table>
<thead>
<tr>
<th>Type of Leprosy</th>
<th>Number</th>
<th>Positive</th>
<th>Per cent</th>
<th>Negative</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaesthetic</td>
<td>43</td>
<td>4</td>
<td>9.3%</td>
<td>39</td>
<td>90.7%</td>
</tr>
<tr>
<td>Nodular</td>
<td>30</td>
<td>5</td>
<td>16.6%</td>
<td>25</td>
<td>83.4%</td>
</tr>
<tr>
<td>Mixed</td>
<td>68</td>
<td>10</td>
<td>14.4%</td>
<td>58</td>
<td>85.6%</td>
</tr>
<tr>
<td>Undifferentiated</td>
<td>26</td>
<td>2</td>
<td>7.7%</td>
<td>24</td>
<td>92.3%</td>
</tr>
<tr>
<td>Total</td>
<td>167</td>
<td>21</td>
<td></td>
<td>146</td>
<td></td>
</tr>
</tbody>
</table>

In this series, only two lepers were below ten years of age, and they gave negative Kahn test.

**TABLE 5, showing Number and Percentages of Positive and Negative Kahns with reference to Sex.**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Number</th>
<th>Positive</th>
<th>Per cent</th>
<th>Negative</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>131</td>
<td>15</td>
<td>11.4%</td>
<td>116</td>
<td>88.6%</td>
</tr>
<tr>
<td>Female</td>
<td>36</td>
<td>6</td>
<td>16.6%</td>
<td>30</td>
<td>83.4%</td>
</tr>
</tbody>
</table>

**III. Summary.**

1. Out of 165 leper adults and two leper children studied in the Swatow district, 21 or 12.5% gave positive Kahn Reactions (9 + + + +, 7 + + +, 4 + +, 1 +)

2. This percentage was within the syphilis rate of general patients (13.5%) in this region.
3. Seven or 33.3% of the 21 positive Kahn cases were also clinically positive for syphilis.

4. Among the types of leprosy, a positive Kahn Reaction was found in 16.6% of nodular cases, in 14.4% of mixed cases, in 9.3% of anaesthetic cases and in 7.7% of undifferentiated cases.

5. The percentage of positive Kahns was slightly higher among the female (16.6%) than among the male lepers (11.4%).

IV. CONCLUSION

The Kahn Reaction is generally negative in leprosy without the co-existence of syphilis.

V. ACKNOWLEDGMENT

We are deeply indebted to Dr. N. D. Fraser of the Swatow Mission Hospital, Dr. Tseng Ki Ling (林增記醫師) and his associates of the Swatow Municipal Leper Colony for permission to examine their leper patients, and help in securing the clinical data and diagnoses. Dr. C. C. Li, my colleague at the Kityang Hospital deserves much credit for his co-operation with us in this investigation. Dr. M. E. Everham of the Kachiech Hospital let us use the laboratory.

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THE PULSE LORE OF CATHAY

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The art of pulse feeling in China is a most mysterious and misunderstood subject. Chinese physicians assert that the entire superstructure of medical practice is built upon the theory of the pulse—the nature, location, course and treatment of every disease depends on this alone. According to the Nei Ching (內經), the medical classic, there are four standard methods of diagnosis:—namely, observation, auscultation, interrogation, and palpation. Observation means to note the complexion and expression of the face; auscultation to listen to the voice and sound; interrogation to inquire into the history, symptoms and cause of the illness, and the condition of the appetite and excretion; palpation to examine the pulse.

In the beginning the relative value of these four methods was in the order named but in course of time the first three were gradually not so much employed, entire reliance being placed on the last. The Difficult Classic says "to know by observation is sublime, by auscultation wonderful, by interrogation skilful, by palpation art." Chang Chung-ching (呉仲景), the Hippocrates of China, in the Golden Chamber, remarked that the skilful doctor knew by observation, the mediocre doctor by interrogation while the ordinary doctor by palpation. The Thousand Gold Remedies states "the skilful doctor knows what is wrong by observing alone, the middling doctor by listening, and the inferior doctor by feeling the pulse." The greatest importance is attached to this doctrine of the pulse and it is universally believed that all internal diseases can be revealed by this method alone. Hence the common phrase "I want to have my pulse taken" is equivalent to "I want to see the doctor."

HISTORICAL DATA.

The exact date when the feeling of the pulse to locate diseases originated in China is unknown. It is recorded in the Ancient History that Pien Ch'iao (扁鵲), who lived about B.C. 255, was the first exponent of this idea. But Wang Shu-ho (王叔和) of the Chin dynasty about A.D. 280, is generally acknowledged as the greatest authority. He wrote the Pulse Classic, a work of ten volumes, which is considered one of the
standard works on medicine. About the period of the Five Dynasties A.D. 907-960 appeared the Secret of the Pulse which is also ascribed to Wang Shu-ho. Researches, however, point to its being a spurious work most probably written by Kao Yang-sheng (高陽生). The form and literary style is poor while some of the teachings also differ from the Classic. This has been the occasion for much controversy from later writers. A French missionary, H. Hervieu, translated it into French in 1735 under the wrong impression that it was a genuine work. This has been re-translated into English first by E. Brookes in 1736 and later published by E. Cave in 1738. As far as can be ascertained this is the earliest Chinese medical book translated into a foreign language. Reprints of the original classic still exist though extremely scarce. It may be of interest to give here a short history of the various editions of this valuable work during the successive dynasties. First published in the Chin period it remained in an unaltered form throughout the following two dynasties. The Sui and Tang Annals, the Thousand Gold Remedies, Kan's Medical Biography, all mentioned this work. It was not until the time of the Five Dynasties, as already stated above, that great confusion arose by the appearance of the spurious work, the Secret of the Pulse, which became so popular that the real classic was gradually forced into oblivion. During the Sung dynasty Lin I (林億) and others (1068-1078) edited old medical books of the palace under imperial orders and the Pulse Classic was included in the collection. In Chia Ting's time Chen K'ung shih (陳孔頴), having obtained a Chien Yang copy, reprinted it at Tsao Szü, Kwangsi. In the Yuan dynasty (1327) Hsia Chin-weng (謝縉翁) of Liu Pin reprinted Chen's edition at Tung Lien Academy, Kiangsi. In the Ming period Wu Mien-hsueh (吳懋軒) included it in his Collection of Medical Reprints. Unfortunately the typographical errors are such that it is unreadable. In the 3rd. year of Wan Li (1576) of the Ming dynasty Hsu Ching-hsing (徐中行), councillor of Fukien, ordered Yuan Piao (袁表) to revise Wu's edition with the necessary corrections. Coming to the Tsing dynasty we find that Wang Hung-nai (王鉉) of Chia Ting rendered a good service in perpetuating the classic by bringing together the Yuan and Ming editions with an old manuscript of his own and another reprint by Chu Ching Tang (居敬堂). He carefully revised the text and issued a valuable reprint of it. This,
The Two Principles: the Five Elements.

In order to understand more fully the significance of the pulse it is necessary first to know something of two other doctrines which form the basis of Chinese medicine and which also play an important part in pulse feeling. The first is the doctrine of the Two Principles called Yang (陽) and Yin (陰). They represent the male and female but with a more comprehensive meaning. As in the cosmos so in man these two primordial forces are the fundamental condition of all processes. They stand for heaven and earth, life and death, day and night, heat, and cold, positive and negative, strong and weak, acid and base etc. corresponding to the even and the odd of Pythagoras, Osiris and Isis of the Egyptians, Ohrmuzd and Ahriman of the Zoroastrians. The second doctrine is the Five Elements which are metal, wood, water, fire and earth. It is believed that the human body, like matter in general, is made up of a harmonious mixture of these elements. They find their chief representations in the five organs—lungs, liver, kidney, heart and spleen, which are further related in a complicated manner to the five atmospheric conditions (drought, wind, cold, heat, moisture), the five planets (Venus, Jupiter, Mercury, Mars, Saturn), the five colours (white, green, black, red, yellow), the five tastes (pungent, sour, salt, bitter, sweet), the five tones etc. Health depends upon the proper equilibrium of the male and female principles and upon the right proportions of the elements. Any derangement of this balance causes disease which manifests itself in the circulation.
Chinese pulse lore is extremely complicated and, in practice, constitutes a most detailed procedure amounting almost to a solemn rite. The examination is made upon both the right and left wrists, the physician using his right hand for the left pulse, his left hand for the right. The middle finger is first laid on the head of the radius, then adding the index and ring fingers whilst the thumb rests upon the dorsum of the carpus. The best time for taking the pulse is the early morning at sunrise. The physician should keep cool and collected, first noting if his own breathing is in order. One inspiration and one expiration constitutes one cycle of respiration. The normal ratio is four beats to one respiration.

According to the Difficult Classic the extent of the pulse is one and nine tenth of an inch and is divided into three parts called tsun 寸 or inch, kuan 寸 or bar, and ch'ih 尺 or cubit. Each of these divisions has two different and distinct pulses, one internal and one external, making altogether twelve pulses, six on the right and six on the left hand. And each of these twelve pulses correlates with twelve definite internal organs, the normal or abnormal conditions of which it betrays. Thus, according to Wang Shu-ho, the inch pulse of the right hand reveals the condition of the lungs and large intestines, of the left hand the heart and small intestines. The pulse under the bar corresponds on the right to the condition of the spleen and
stomach, on the left to the liver and gall bladder. The pulse felt on the right cubit shows the condition of the gate of life and san chiao (三焦), on the left cubit it tells the state of the kidney and bladder. Opinions, however, differ widely concerning this supposed relationship between the pulse and the particular organ. Of the numerous systems four stand out the most prominent. The following table will show it more clearly.

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<thead>
<tr>
<th>LEFT WRIST</th>
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<tr>
<td>Inch</td>
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<td>Bar</td>
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<td>Cubit</td>
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<td>External Heart</td>
<td>Internal Small Intestines</td>
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<td>External Liver</td>
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<td>External Kidney</td>
<td>Internal Urinary Bladder</td>
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<td>External Lung</td>
<td>Internal Large Intestines</td>
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<td>External Spleen</td>
<td>Internal Stomach</td>
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<tr>
<td>External Gate of Life</td>
<td>Internal San Chiao</td>
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This phase of Chinese pulse lore is the most absurd for no two interpretations are alike making one at a loss to know which to follow. It is also inconceivable how the pulse at a given point can give two distinct signs and reveal the state of two different organs. Great emphasis is laid on its varieties. Indeed, the list of variations is an endless one. Not only are the rate, character, rhythm, volume, tension etc. minutely observed but the age, sex, temperament, constitution, weight and growth of the patient as well as the time of the day, season of the year, influence of the constellation are also taken into consideration. These fine distinctions, however, exist only on paper for no one can give a satisfactory demonstration of them.

VARIETIES OF THE PULSE.

There are Four Principal Pulses: Fu superficial, a light flowing pulse like a piece of wood floating on water; Ch'eng deep, a deeply impressed pulse like a stone thrown into water; Ch'ihs slow, a pulse with three beats to one cycle of respira-
tion; and *Shu* 数 quick, a pulse with six beats to one cycle of respiration. In addition to the above main types there are a host of subsidiary pulses which vary according to different authors. The following is from Li Shi-chên, the famous compiler of the *Pen tsao* or System of Materia Medica, who is also recognized as one of the authorities on this subject.

*Hua* 滑 slippery; like pebbles rolling in a basin.

*Se* 滑 small; fine, slow and short like scraping bamboo with a knife.

*Hsii* 虚 empty; slow, large and compressible.

*Shih* 實 full; large, long and slightly tense, felt on both light and heavy pressure.

*Chang* 長 long; neither large nor small, the stroke markedly prolonged.

*Tuan* 暫 short; no volume, strikes the fingers sharply and leaves it quickly.

*Hung* 洪 overflowing; full, bounding, forceful rising and gradual decline.

*Wei* 微 thready; very fine and soft, easily obliterated by pressure.

*Chin* 纖 tense; hard and full like a cord.

*Huan* 漫 tardy; four beats to one cycle of respiration, equal strength, like willow branches swaying to a light breeze.

*Kung* 虚 hollow; superficial, soft and hollow like an onion stalk.

*Hsien* 紫 taut; like a tremulous musical string.

*Kê* 革 hard; tense and hollow like touching the surface of a drum.

*Lao* 牢 wiry; deep, strong and slightly taut.

*Ju* 蠟 soft; superficial and fine, like thread floating on water.

*Jo* 弱 feeble; very soft and deep, felt on light touch and disappearing on pressure.

*San* 散 scattered; large, irregular like willow flowers scattering with the wind.

*Hsi* 細 slender; smaller than feeble but always perceptible, thin like a silk thread.

*Fu* 伏 hidden; embedded in the muscles, only felt on strong pressure.

*Tseng* 動 tremulous; quick and jerky, pulsation covering a space no larger than a pea.

*Ts'u* 促 running; rapid with occasional missing beat.
The pulse indications are very important. Each variety or combination of varieties is believed to reveal a distinct disease. Thus a fu or superficial pulse, which belongs to the yang or male principle, points to complaints externally contracted through the six influences: wind, cold, dampness, heat, dryness and fire. If a pulse is superficial and strong, it indicates wind and heat; if superficial and weak, deficiency of blood. If it is slow, it means external chills; if quick, wind and fever. If the same pulse is chin or tense it signifies wind and cold; if huan or tardy, rheumatism. A combination of the signs superficial and ju or soft denotes sunstroke; superficial and kung or hollow, haemorrhage: superficial and hung or overflowing, weakness and fire; superficial and wei or thready, fatigue through overwork; superficial and se or small, seminal weakness; superficial and san or scattered, exhaustion and collapse; superficial and hsien or taut, indigestion; and superficial and hua or slippery, wind and phlegm.

A ch'eng or deep pulse which belongs to the yin or female principle, indicates external disease due to the seven passions namely joy, anger, anxiety, worry, grief, fear, and shock. If the pulse is deep and slow there is weakness and cold; deep and quick, latent heat. If it is tense it means colic due to chills; if it is tardy, accumulation of water. A deep and slippery pulse points to indigestion; a deep and hidden pulse signifies vomiting and diarrhoea.

According to Chinese anatomy the internal organs are of two kinds: the Five Tsangs or solid organs, which consist of the heart, liver, spleen, lungs and kidneys and the Six Fus or hollow viscera, which are the gall bladder, stomach, large intestine, small intestine, urinary bladder and the san chiao. The function of the organ is supposed to store up but not to eliminate, while the viscera is to eliminate but not to store up. The ch'ih or slow pulse reveals the condition of the organs. When it is strong it indicates pain; when it is weak it indicates debility. The shu or quick pulse tells the diseases in the viscera. Internal heat gives a quick and strong pulse; abscess, a quick and weak pulse.
A slippery pulse denotes diseases due to mucus. If the right pulse on the 'bar' is slippery there is wind and mucus. If the same pulse appears on the 'inch' there will be vomiting and regurgitation. When it is found on the 'cubit' it means pus and blood in the stool. A small, fine pulse indicates debility and collapse. If the pulse on the 'cubit' is small it signifies loss of blood and vitality; on the 'inch' profuse perspiration; on the 'bar' cessation of secretions. If the pulse on the 'bar' is taut like a musical string, it is a symptom of phlegm; on the 'inch, headaches; on the 'cubit,' colicky pains. A tense pulse indicates pain due to chills; a full, overflowing pulse, burns and scalds; a tremulous, quick pulse, pain caused by internal heat or excessive sweating and haemorrhage. The long pulse, the short pulse, the large pulse and the small pulse all denote derangement of the respiratory system. A soft pulse points to deficiency of the yang essence; a feeble pulse, deficiency of the yin essence. A thready pulse indicates general debility while a scattered pulse means extreme exhaustion. A hard pulse signifies seminal loss in men and uterine haemorrhage in women; a wiry pulse hernia or heart pains; and a hollow pulse excessive loss of blood.

**Prognostications of the Pulse.**

We now come to another interesting feature of this study, namely the prognostications of the pulse. Native physicians profess to be able to predict the result of an illness by its various signs. In cases of apoplexy, the pulse should be superficial and slow; if it is firm, rapid and large there is danger. In typhoid fever if the pulse is superficial, full and overflowing, no anxiety need be felt, but if it is thready, small and soft it is serious. In malaria fever a taut pulse is favourable. If it is taut and slow it indicates heat; if taut and quick it indicates chills. It is unfavourable if the pulse is large, scattered and irregular. In cases of diarrhoea the pulse is deep, small, slippery and feeble; and if it is strong, large, superficial and quick, there is danger. A good sign in vomiting and regurgitation is a superficial and slippery pulse; when it is deep, quick, fine and small it indicates bleeding in the intestines and is hopeless. One should not be alarmed to find an irregular pulse in cholera. It is only when this sign is found together with a curled tongue and shrivelled testicles that recovery is very improbable. The pulse in bronchial diseases is generally
superficial and small and is easy to cure; when it is deep, hidden and tense death is near. It is favourable if the pulse in asthma is superficial and slippery; but unfavourable, if deep and small especially when the hands and feet are cold. In cases of high fever, a quick and overflowing pulse is desirable; if it is thready, feeble and with low spirits it is fatal. In wasting diseases the pulse is weak and quick; if it is thin and small death is certain. In cases of loss of blood no anxiety need be felt if the pulse is hollow, small and tardy; but if hollow, large and quick danger is apprehended. Where there is pulmonary congestion, a wiry and large pulse is favourable; but few can recover quickly if it is deep, small and thready.

A good sign in diabetes is a large and quick pulse; if it is slender, thready, short and small a cure is almost hopeless. In retention of urine the nose is usually yellow. If the pulse is full and large the disease is curable; but if slow and small it is most difficult. In cases of insanity, if the pulse is superficial and overflowing it is a good omen; but if deep and quick it is very unfavourable. The pulse in epilepsy should be superficial and tardy; if it is deep, small and quick it is a sign of death.

There are nine kinds of pain in the abdomen. A slender and slow pulse indicates quick recovery; a superficial and large pulse denotes a slow convalescence. Ruptures are due to trouble in the liver and the pulse is always taut. If it is wiry and rapid it is well; if feeble and rapid it is fatal. A favourable indication in jaundice is a full, overflowing and quick pulse; it is bad if superficial, large, thready and small. In dropsical swellings the pulse is superficial, large, full and strong; if it is deep, fine and thready no doctor's art is of avail. In accumulation of humours in the system if the pulse is strong and full no danger exists; but if deep and slender the case is dangerous. The pulse in diseases caused by evil spirits varies on both wrists; sometimes large and sometimes small, sometimes quick and sometimes slow. Where obnoxious influences exist and the belly swells up, a tense and fine pulse is curable; a large and superficial pulse is serious. In cancer and carbuncle a full overflowing and large pulse before suppuration is good; but the same pulse after suppuration is critical. In abscess of the lungs the pulse on the 'inch' is quick and full. In collapse of the lungs it is quick and weak. In both these diseases the
complexion is white and the pulse short and small. If the pulse is quick and large in compass it means loss of air and blood. In cancer of the intestines a quick and slippery pulse is favourable, but if deep and slender the patient may as well prepare for the future!

Besides the foregoing there are seven special pulses which indicate impending death. If the pulse resembles the pecking of a bird, or water dripping from a roof crack, or the upsetting of a cup it means extinction of the spleen pulse and death may be expected within four days. If the pulse resembles feathers blown by the wind, or feathers brushing against the skin, it indicates serious disease of the lungs and the end will come within three days. It is a sign of fatal kidney trouble and death may happen within four days if the pulse is like the snapping of a cord or like the flipping of the finger against a stone. When the liver ceases to perform its function the pulse is like the string of a new bow or like the blunt edge of a sword. The patient will die within eight days. If the pulse resembles the rapid rolling of peas death may be expected in a day. A pulse acting like a fish or shrimp darting about in the water or a pulse like water oozing from a spring is a fatal symptom.

Variations of the Pulse.

An important point, when making pulse tests, is the normal variations such as the season of the year, age, constitution and sex of the patient, which should also be taken into consideration. In spring the pulse is taut and tremulous like a musical string, in summer it is full and overflowing, in autumn it is elastic, and in winter it is deep like a stone thrown into water.

A thin person’s pulse is generally superficial and full, a fat person’s pulse is usually deep and quick. Five beats to one cycle of respiration is normal in a hot tempered person, but four beats to one cycle of respiration in a person of slow temperament means sickness. In the aged the pulse is mostly empty, in young people it is large, and in infants rapid—about seven beats to one cycle of respiration. Northerners often have strong and full pulses while southerners soft and weak pulses.

Differentiation is also made between the pulse of the sexes. In man the pulse on the left hand should be large to correspond with the yang principle, but in woman it should be the opposite
because the *yin* principle predominates on the right. Again the ‘cubit’ pulse in man is always slow, weak and compressible while in woman it is usually strong, large and long. Marvelous are the claims made by pulse theorists regarding the diagnostic value of pulse feeling. One is able to tell, it is affirmed, whether or not a woman is pregnant or even to predict the sex and development of the uterine foetus by these tests alone. For instance, in cases of cessation of menstruation with no apparent disease, if the three pulses are slippery it indicates pregnancy. If, in addition, they are rapid and scattered it shows three month’s conception, if rapid and unscattered five months. If the pulse on the left wrist is rapid a son may be expected but if the right pulse is rapid it is certain to be a daughter! On the left hand a superficial and overflowing ‘cubit’ pulse or a large ‘inch’ pulse denotes a male child; on the right hand a deep and full ‘cubit’ pulse or a deep and slender ‘inch’ pulse indicates a female child. If the ‘cubit’ pulse on both wrists is overflowing it means twins of two boys, if deep and full two girls. Triplets may be looked for when the pulses of both wrists are smooth and equal. They will be all of the weaker sex. But if the pulses show the opposite nature all three will be of the stronger sex.

Such, in general, is the sum of the knowledge of what Chinese think of this doctrine of the pulse. Before concluding this paper, however, it is well to give here a few.

**Opinions of Western Writers**

regarding this subject. Du Halde in a *Description of the Empire of China* wrote: “The whole science of medicine among them (the Chinese) consists in the knowledge of the pulse and the use of simples, which they have in great plenty and recommend as specifics in diverse distempers. They pretend, by the beating of the pulse only, to discover the cause of the disease, and in what part of the body it resides. In effect, their able physicians predict pretty exactly all the symptoms of a disease; and it is chiefly this that has rendered the Chinese physicians so famous in the world. When they are called to a sick person, they first set a pillow under his arm; then placing their four fingers along the artery, sometimes gently and sometimes hard, they take a considerable time to examine the beating, and distinguish the minutest differences;
and according as the motion is more or less quick, strong or weak, uniform or irregular, they discover the cause of the disease. So that without asking the patient any questions they tell him where the pain lies, whether in the head, stomach or belly; and whether it be the liver or spleen, which is affected. They likewise foretell when his head shall be easier, when he shall recover his appetite, and when the disorder will leave him. I speak not here of those quacks who profess the art merely to get a livelihood, without either study or experience; but of the skilful physicians, who, it is certain, have acquired a very extraordinary and surprising knowledge in this matter."

The early missionaries seemed to have great confidence in the efficacy and skill of Chinese physicians respecting the pulse, but other writers, on the other hand, condemn this system as the most ridiculous and absurd. For example, Dr. Hobson, in an excellent paper in the Medical Times and Gazette of November 1860, says: "While they—the Chinese—write learnedly about the wonderful properties of the pulse, and palm a lie upon the public in professing to distinguish its minute and varied forms, yet I have never met with one Chinese medical practitioner who dared affirm to my face that he had done so; or was willing to try his boasted skill on a patient of mine, though offered a considerable reward to point out any well known disease by the pulse alone."

Dr. James Henderson in The Medicine and Medical Practice of the Chinese 1864, remarks: "Chinese physicians may not be to blame for want of penetrating astuteness or natural talents, but they are to blame for declaring that they know what they do not know, for declaring they feel in the pulse what they do not feel, for not seeking more knowledge, and for resting satisfied with present attainments. Thus it will be observed that Chinese books contain so much nonsense and patent absurdities regarding the pulse, that an effort is required to repress a feeling of rising indignation against a hoary system so full of falsehood and folly."

In The Mystic Art of Pulse Feeling in China 1924, Mr. L. C. Arlington states: "Of all the systems of downright and solemn quackery, none is so evident or prevalent both in theory and practice as their doctrine of the pulse. And, as they are ignorant of the function of the heart, it stands to reason that they must be ignorant of the circulation of the blood. They
claim that there is a different and distinct pulse for every part of the body, which is felt on both wrists, believing that not only does the pulse differ on both wrists, but actually pretend to distinguish three on each arm.”

The foregoing statements, however, are not strictly true for we find not a few famous native authors who did not believe in the absolute infallibility of the pulse. Wang Hai-tsang (王海藏) observes that if a patient keeps silent and simply asks the doctor to feel the pulse to test his ability does he know that in fever the pulse is rapid, in weakness slow, in a strong constitution it is full, and in a debilitated person it is weak? The above conditions may be indicated by the pulse. As to the cause of the illness or the objects that produce the injury can they be ascertained by the pulse alone? Su Tung-po (蘇東坡), the famous poet, remarks: “It is a common practice among the people to conceal the symptoms so as to find out whether the doctor can guess at the disease. When I consult a physician I tell him everything before I submit my pulse to be examined. Hence I often get cured even only attended by an ordinary doctor. My aim is to get cured and not to embarrass him.” Native practitioners may be too extravagant in their claims but with the accumulated knowledge of forty centuries which represents the thoughts and experiences of many bright minds it is only reasonable to presume that there must be something in this doctrine. The Chinese, as a race, are not unintelligent. To think that all of them for ages past can be hoodwinked by a system of downright quackery is highly irrational. Who has not in one's practice among the people, every now and then, come across some astounding revelations made by native practitioners relating to the symptoms and course of an illness with the pulse? With the introduction of the numerous instruments as an aid to diagnosis the modern doctor has lost many of his faculties of observation, his senses being gradually dulled for want of practice. We are often surprised to see the old time family physician making fairly accurate predictions without much instrumental help which sometimes appear unexplicable. It is a recognized fact the senses of touch and hearing in the blind are extremely keen. By constant use and pure concentration they have developed them to such an extent that they can tell a lot of things imperceptible to the average person. Card players,
again, sometimes amaze spectators by their marvellous feats in telling the numbers on a card by feeling it with the fingers alone. From this we may infer that native doctors may have so developed the sense of touch that they do feel something in the pulse which is not detected by ordinary folks. Having such long experience and so much detailed data is it not possible that they may be in a better position to interpret the indications of the pulse? Thus their claims are not absolutely without foundation. However, scientific medicine has made such rapid progress, and the various tests, both chemical and instrumental, are so accurate and reliable that this feeling of the pulse as a diagnostic method has lost much of its practical value. At the present time we cannot but relegate this pulse lore of Cathay to the domain of medical history and view it only as one of China’s contributions to medicine in the past.

THYROID DISEASE IN THE ORIENT AND ITS TREATMENT*

H. W. MILLER, M.D.

It affords me great pleasure to present my first paper in China on the etiology and treatment of abnormal conditions of the thyroid gland, before the Shanghai Branch of the National Medical Association. I may state that since my return to the Orient, by far the largest number of observations on thyroid cases, as well as those surgically treated, have been in the Philippine Islands. During my five visits to the Philippine Islands during the last year and a half, we have operated on fifty-one cases of toxic adenomata and hyperplastic thyroids, mostly of the exophthalmic type. Fifty recovered and one died from shock immediately following operation. All the above-mentioned fifty-one cases were well advanced, many of which were, and had been, in a state of invalidism for several months and years past. However, in no instance did we reject any case as unfavorable for surgery. The risks, therefore, in the above cases were necessarily very great, as the conditions under which we operated, were none too

*Read at a Meeting of the Shanghai Branch of the National Medical Association, October 17, 1928.
favorable. We were obliged to go from one hospital to another, and on each trip the after care was, after the first day or two, left with the house doctor. We were also at a considerable disadvantage in having no gas anesthesia, being limited to either local anesthesia or ether. The above work was done with assistants untrained in the technic of thyroid surgery. We regret the loss of this one case, it is possible, could we have worked under more ideal conditions, such as longer preoperative preparation of the patient, the help of a trained staff accustomed to team work, together with the assistance of ethylene anesthesia, the result would have been different.

During the past two and a half years in Shanghai, we have operated on thirty-one (31) cases of thyroid disease without the loss of any, all of which have made very satisfactory convalescence. Of those operated upon here, one came from Canton, one from Waichow, (in the Hakka area), one from Foochow, one from Peking, two from Korea, one from Swatow, two from Hongkong, one from Ningpo, and two from the Philippines, while the remaining nineteen were from Shanghai. In addition to the above list, one Japanese lady was operated on in St. Luke’s Hospital in Tokyo, making a total of (32 and 51) eighty-three operations with one death.

Thus far, in China, about one-half of the patients operated on in Shanghai for toxic goitre have been Chinese. Our first cases were mostly Americans and Europeans but of late by far the greater portion are Chinese. While Shanghai and Kiangsu Province is not an endemic goitre belt, there are a very perceptible number of cases of Graves’ disease and adenomata of the thyroid.

Toxic adenoma and exophthalmic goitre are very prevalent in Western and Southwest China, and along the southern border of Mongolia, as well as in certain other circumscribed areas of China. It is very evident that many cases of heart irregularities, neurosis, nervous prostration and gastro-intestinal trouble due to over function of the thyroid are very frequently overlooked, and failing to discover the cause, have been unsuccessfully treated. In view of the very great advance in the safety and success of thyroid surgery in the more recent years, we believe that the influence of the thyroid in its relationship to disturbed metabolic functions should be more carefully thought of and surgical treatment early instituted.
FUNCTION OF THE THYROID

The thyroid gland may be properly styled the governor that maintains the balance in the rate of functioning of certain vital organs of the body. Its over-activity causes a decided stimulating influence upon the cardio-vascular and nervous mechanism of the body; while its lack of functioning results in the slowing up of the rate of living, as is manifested in myxedema or cretinism, which conditions are characterized by slow pulse rate, delayed nerve transmission, subnormal temperature and the retardation of mental activity. This abnormal increased sensitization of the nervous mechanism is the result of the increased iodine content of the blood.

In other words, we may think of the body as an electrochemical mechanism, in which the electric conduction over the nerves, as well as the process of oxidation, is controlled by the iodine content in the blood, lately known as the Thyroxin. When iodine is produced and elaborated into the tissues of the body in increased amounts, the electro-conductivity to the tissues is correspondingly increased. Thus this accounts for the very alert and quick responses noted in all exophthalmic patients, as well as the hypersensitiveness, the increased oxidation, the high metabolic rate, the drive upon the cardio-vascular system as noted by tachycardia and hypertension. Thus we may think of hyperthyroidism as hyperiodism. One should clearly differentiate non-toxic goitre on the one hand from that of toxic adenoma and hyper-plastic thyroid on the other hand. What is commonly understood as physiological goitre is a type of symmetrical enlargement of the thyroid, which may be enlarged prenatally, or which may become especially prominent about the time of puberty, and for a few years thereafter another type occurs as an enlargement due to benign and non-toxic adenoma which does not usually disappear, but gradually enlarges as the years go by and may later become toxic.

ETIOLOGY

The etiology of endemic goitre is today commonly understood to be a lack of iodine in the water or food content. The normal amount of thyroxin, which is the synthetic product of the gland so named by Kendall of the Mayo Clinic, is about fourteen (14) milligrams, and the quantity that is required daily is a little less than one milligram. When iodine is deficient
in amount in the food or water and is not supplied to the gland, there is noted an increased deposit of colloidal material in the acini of the gland, producing the uniform enlargement of the thyroid. By the administration of small quantities of iodine in the form of sodium iodide, or of syrup ferrous iodide, or the syrup hydroiodic acid, it will be noted that there is a decrease in the size of the thyroid gland in non-toxic goitre whereas iodine administered to Graves' disease increases colloid.

However, it should be borne in mind that after the patient reaches the age of twenty-five, the administration of iodide as a prophylactic measure is of practically no value, but on the contrary may only serve to excite and stimulate the gland, thus producing thyrotoxicosis. At best in all toxic goiter the effect of iodine is temporary, for according to the late experiments of Mosser: When iodine is first given, the cells are stimulated to secrete an excessive amount of colloid. This colloid fills the acini and mechanically compresses the lining cells, thus reducing their secretory power. Less thyroxin is produced, and the patient shows clinical improvement. Gradually the cells adjust themselves to the changed condition and resume their secretory power. The amount of thyroxin is thus again increased and the toxic symptoms increase proportionately. Further iodine medication fails to alter the production of thyroxin but does continue to stimulate colloid production. After prolonged iodine administration the cells become exhausted, can no longer produce colloid, and on continual iodine stimulation they degenerate. However, even in the stage of exhaustion, they are still quite capable of carrying out their pathologic function, i.e., production of excessive amounts of thyroxin. The microscopic picture, which is usually interpreted as a specific effect of iodine on the thyrotoxic producing properties of the cells, is in reality the effect of prolonged and excessive colloid production.

The treatment for endemic goitre, therefore, is clearly that of the administration of iodine. As far as I have been able to observe, we do not have, in the area around Shanghai, or in the Kiangsu Province, endemic goitre. We do have sporadic cases of adolescent goitre, and these cases may be traced to certain hereditary deficiencies or to dietary deficiencies in this or that particular family. Most of the goitres seen in this area are those of toxic-adenoma, and a few cases of hyperplasia of
the thyroid gland, with or without exophthalmus. And, this
group of cases is amenable only to surgical treatment, and the
symptoms are in proportion to the increased production in the
gland of thyroxin.

I wish to say here that in not every case presenting
symptoms of hyperthyroidism do we find apparent enlargement
of the thyroid gland. Among some of the worst cases of
exophthalmic goitre in which there was the greatest surgical
risk, there has actually been present an under-sized gland, and
the removal of from two-thirds to three-fourths of this small
gland results in the clearing up of the symptoms.

It may be noted in passing, that goitre is six times as
frequent in girls and women as in boys and men.

McCarrison, who studied toxic goitre in the Himalaya
Mountains, believed that it was due to some infecting organism.
It cannot be denied but that infections of one type or another
seem to have in many cases dated the beginning of exophthalmic
goitre, as goitres are frequently noted as having directly
followed sieges of scarlet fever, typhoid fever, or an attack of
malaria, or following on acute tonsillitis or quinsy, etc. But,
this is only the explanation of a certain few cases.

Heredity certainly plays an important part in the role of
causes of goitre, and adenomas in particular can be traced in
the family tree, from grandmother to grand-daughter, and to
great grand-daughter.

Nerve strain has been unquestionably a very large factor
among the occidentals in the Orient, in which we have already
noted a very large number of cases of toxic adenoma and
exophthalmic goitre. And it only seems natural, in view of the
thyroid having within it the control of the rate of metabolism,
that any infectious disease or nerve strain that disturbs
metabolic activity, would alter the functional capacity of the
thyroid.

The changes that take place at puberty, as well as at the
menopause, and disturbances of metabolism resulting from
parturition are events in which the enlarged thyroid in certain
cases definitely dates its beginning.

Symptoms of fear are similar to those of hyper-thyroidism,
such as the protruding of the eyes, the tremor of the hands,
tachycardia, and general nervous excitation.
CLASSIFICATION OF TYPES

There are many classifications of goitre, but I have found the following classification very practical for the general practitioner, by which we divide these cases of thyroid disturbance into five groups, namely:

1. The first group is that of adolescent goitre, or what is known as the diffuse colloid goitre. This type is most commonly noted about the age of puberty, and frequently disappears by the age of twenty. It should be treated by the internal administration of iodine and where there are no symptoms of increased nervousness, and of hypersensitiveness and no tachycardia, should not be considered as surgical.

2. The second group is that of simple benign adenoma, which may be noted in the new born, and which may occur at any time during early life and oftentimes growing to a large size, at times extending outwards, and may be unilateral or bilateral, there being a single adenoma or multiple adenomata. These adenomata sometimes extend downward, and are then known as intrathoracic. They give rise to symptoms, largely as a result of pressure, at times compressing the trachea, thus interfering with the breathing; also interfering with the venous return circulation of the head, causing congestion of the head and face. Oftentimes marked varicosity in the veins of the chest are observed. These adenomas, by reason of their pressure, will sometimes cause atrophy of the cartilaginous rings of the trachea, thus having a tendency to cause collapse of the trachea during the removal of any portion of the gland, sometimes leading to serious asphyxia. The pressure may also paralyze the recurrent laryngeal nerves, producing palsy of the vocal cords with aphonia.

3. The third group we call toxic adenomas. Simple adenomas may at any time become toxic adenomas. They may degenerate, producing calcereous deposits in the gland substance, rendering it difficult to distinguish between calcified cartilaginous rings, and degenerated calcified adenomatous tissue. Not infrequently there is hemorrhage into the acini, causing quite sudden enlargement of the gland, sometimes occurring over night. Cyst formation in the acini is also frequently met with in this group. This third group is always treated surgically.
The toxic symptoms of this group are either due to degeneration in the adenoma, or the irritation and stimulation of the glandular epithelium of the acini and increased thyroxin production or both.

4. The fourth group is that of Graves' disease, or Basedows' disease, commonly known as exophthalmic goitre, in which there is hyperplasia of the vesicular epithelium, and most generally, enlargement of the gland. The symptoms of hyperthyroidism are in proportion to the functional activity of this gland, and, as heretofore noted, this is not always dependent upon the size of the gland. It should be also further noted and understood, that the classical symptoms of Graves' disease may be present in cases of toxic adenoma, and the basic factor in the production of the symptoms is that of hyperiodism, or too much Thyroxin content. This group should have early surgery, for the only way to reduce the iodine secretion is to reduce the amount of gland capable of secretion.

5. Group five are those of sarcoma and carcinoma of the thyroid gland, in this group there have been noticed thus far in all literature, only a comparatively few cases. Out of twelve hundred thyroidectomies I have noted but one case in my own practice, and statistics from the Mayo Clinic show but one case to a thousand.

**Diagnosis**

There is perhaps nothing easier to diagnose than a well-developed case of exophthalmic goitre. And of course the very presence of adenomas or cystic adenoma, or symmetrical enlargement of the neck extending out from the anatomical location of the thyroid, which normally lies antero-laterally to the cricoid cartilage and upper cartilaginous rings of the trachea, is to be considered as an enlarged thyroid. It is also well to think in this connection of Hodgkins' disease, or the enlargement of a tubercular lymph gland, branchial cyst, and esophageal diverticulum, as well as increase in subcutaneous adipose tissue and lipoma. But usually these are easily distinguished. The chief difficulty lies along the line of diagnosing the borderline cases of hyperthyroidism, especially in the presence of some chronic infection such as tuberculosis, or neurosis, and heart disease, when there is often a plus basal metabolism. The general symptoms of hyperthyroidism are, loss in weight,
progressive exhaustion, increase in pulse rate, rapid tremor of the muscles, (noticed on extension of the hand), hot skin, voracious appetite with frequent gastro-intestinal disturbance, slight hypertension, and increased basal metabolic rate.

Exophthalmus is not always present, and in these patients Graefe's sign, Lowe's sign, and Moebiu's sign are of differential value.

The use of the Goetsch test, by which about six minims of adrenaline chloride administered subcutaneously will after five minutes, where hyperthyroidism is present, show an increase in the blood pressure, pulse rate, respiration rate, nervousness or nervous tremor of the fingers, increase in the size of the pupils and hyper-hydrosis, in about eighty-five per cent (85%) cases, will be found in agreement with the metabolic rate. The Goetsch test, however, should not be used in serious cases of hyperthyroidism, but only in the more mild types, where the diagnosis is in doubt. In the borderline cases metabolism and the Goetsch test are particularly valuable.

TREATMENT

It may be safely stated, that the treatment *par excellence* of all cases of toxic goitre and of hyperthyroidism is ligation and surgical removal of the major portion of the gland. There is perhaps no disease which is more satisfactorily treated, than that of goitre. However, since the operation is technically difficult, and ether or chloroform anaesthesia of too great risk in most patients, it must be performed with either local anesthesia, or a combination of local anesthetic and gas anesthesia. Whereas thyroid patients are usually of a very nervous and excitable nature, and sometimes of a hysterical type, it is a fact that surgical removal of the gland is unfortunately frequently postponed in most cases until the disease reaches a very grave state, at which time even the attending physician not infrequently fears to trust himself in recommending surgery, lest the outcome should prove disastrous. Therefore, the use of remedies more numerous than I could mention in this paper are tried out, as well as every other line of therapy, are employed in the hope of bringing relief such as iodine, ice bag to heart, electricity and X-ray. All of these, of course, in the end are doomed to fail, with the exception of the few types of goitre such as are included in group one,—
endemic goitre. In communities where the people have become educated to the safety of surgery and where facilities are provided and thyroid clinics are maintained, the medical profession are becoming educated into the early recommendation of lobectomy, with the result that the former dread of surgical treatment of the thyroid is becoming less and less. It is a fact that the discomfort to the patient after operation is very slight.

We must admit that surgical treatment of the thyroid gland is attended with certain risk, such as aphonia, due to the injury to the recurrent laryngeal nerve, to hemorrhage (especially post operative), to injury to the trachea, injury to the carotid artery, to the jugular vein, the production of pneumothorax due to injury to the pleura. Then, of course, surgical myxedema has to be thought of, though this is extremely rare. Such complications are extremely rare in the hands of thyroid surgeons. In fact, the operation is considered so safe and the results so satisfactory, that practically no patient with endurance sufficient to reach the hospital is rejected for treatment. Including all that have come to us, our operative mortality has been less than one per cent.

Time will not permit me in this paper to go into the technique of the operation for the surgical removal of the thyroid. The results obtained, depend of course upon the amount of thyroid gland removed, and this can be judged well only by extended experience in this field of work. Usually the amount of thyroid left is that of about one-third of the normal size of the gland, but of course this varies considerably, leaving more in young adults, and performing more radical operations in those who have passed the menopause; and it further depends upon the type of thyroid being treated, and its functional activity.

For several years now, we have ceased ligation, for the reason that by improved technique we have minimized the shock in the surgical removal of thyroid, so that it is practically no more of a psychic shock than ligation, with the chances of recovery from lobectomy better than that from the cases in which ligation was employed. The success of the operation will depend to a great extent upon the preparation of the patient, the training of the staff, which includes the anesthetist,
the surgeon and his assistant, and the corps of nurses, with every preparation made to meet emergencies that might arise at the time of the operation.

The choice of anesthesia is very important, and in ethylene gas we have the most favorable anesthetic known, since it decreases metabolism through its depressing effect upon the respiratory centers. It leaves no unpleasant results following the operation. When gas is not available, the use of local anesthesia may be indicated, in which event one-half per cent (½%) of novocain would be used, but never any adrenalin.

The operation of thyroid should never take longer than thirty minutes under general anesthetic; forty-five minutes under local anesthetic, and it is possible to do the average type of case within fifteen minutes. Thyroid cases cannot stand long surgical manipulations, or prolonged anesthesia.

In the after-care of these cases morphine is a very valuable drug, and practically the only one used. Thermal reaction is controlled by the use of the ice bag to the heart, or of cold compresses to the chest. The battle is only half won, in fact, at the close of the operation. Many cases are such that life will depend upon the after-care. Convalescence, as a rule, requires the supervision on the part of the physician of from a few weeks to several months.

Time will not permit me to make case reports, but in this connection I shall be glad to exhibit several types of goitre removed here in Shanghai, from Chinese patients, as illustrating the several types of goitre above referred to, and to speak in particular of one or two cases.

REFERENCES

Under the name Cryptophthalmus, Zehender and Manz\textsuperscript{1} in 1872 described an anomaly by which the eyeball had been completely covered by the external skin. Following this report, case reports of this condition have been added to ophthalmological literature by E. Fuchs\textsuperscript{2}, Otto\textsuperscript{3}, Karman\textsuperscript{4}, Golowin\textsuperscript{5}, Goldziehr\textsuperscript{6}, v. Hippel\textsuperscript{7}, Guttmann\textsuperscript{8}, Ginzberg\textsuperscript{9}, Coover\textsuperscript{10}, Key\textsuperscript{11}, Magruder\textsuperscript{12}, Müller\textsuperscript{13}, and others. In 1928 Avizonis\textsuperscript{14} was able to collect reports of thirty-seven cases of cryptophthalmus by twenty-seven authors from the literature since Zehender and Manz first published their case. Some of the cases which were reported under this name, however, were not real cryptophthalmus, and should have been classified as congenital symblepharon and ankyloblepharon, while other cases in which this condition really existed have been reported as symblepharon and ankyloblepharon congenita. Avizonis, in reviewing all the cases, was of the opinion that only twenty-nine cases, including his own, could be considered as typical cryptophthalmus, either complete or partial.

Because of the rarity of this malformation, every new case which may throw some light on this subject is of interest, and therefore the following case is reported.

\textbf{Case Report}

Y. H. K. (Hunan-Yale Hospital No. 6569), a male infant, forty days old, was brought to the hospital by his parents on June 2, 1925, because of failure of the eyes to open. Both parents were healthy, and denied having had venereal infections. There was no history of similar trouble in previous children, or of consanguinity or insanity in the family.

The mother, who was about 25 years of age, had never had a miscarriage or abortion, but had some eruption on the genitalia and a leucorrhea for several months before the birth of this child. The labor was difficult and lasted for over twenty-four hours. The child was quite healthy, well nourished, proportionately developed, and the skin over the eyes was not inflamed. No other defects were found elsewhere in the child.
About four weeks previous to the admission, a native country doctor was consulted, who made a linear superficial incision on the skin in an attempt to open the eyes, but he was frightened by the amount of bleeding, and no further attempt was made. The wound closed in a few days.

Examination.—The anterior aperture of both orbits was covered completely by skin which was continuous with that of the face (fig. 1.). Only a few very fine hairs were seen near the temporal ends of the eyebrows, and the eyelids and their appendages were not recognizable. The skin was very thin, and the tarsi were not felt. A linear scar on the skin, about \(1 \frac{1}{2}\) cm. in length, was seen over each “eye” in the position where the palpebral aperture should normally be found. These scars were superficial, and were apparently the results of the recent operation attempted by the country doctor.

Right:—On the temporal side, near the upper and outer orbital margin, there was a small indentation due to infolding of the skin. On the nasal side there was a big fold of skin, the root of the nose was very broad. This fold deviated temporally from each side of the root of the nose, and appeared to be more or less bound down to the nasal and upper orbital margin. The frontal bone stood out very prominently, and was unusually well developed in comparison with the lower half of the face. When the baby cried, his “eyes” seemed to move slightly. On palpation, the right eyeball which seemed to have a diameter of 5 mm. was situated closer to the nasal wall of the orbit; it was freely movable like a tumor to which the skin was firmly adherent.

Left:—On the temporal side, the skin over the underlying eye was smooth. The nasal fold which extended from the side of the nose nearly to the outer end of the upper orbital margin, was more clearly visible on this side than on the right. The underlying eye protruded slightly out of the orbit. The left “eye,” judged by palpation, seemed to be larger than the right. It was estimated to be about 10 mm. in diameter, and was so freely movable that it gave the impression of being a loose foreign body in the orbit, except for the fact that the skin of the lid was adherent to it.

Laboratory Examinations.—Urine, feces, and blood were all normal. Wassermann of mother’s blood was negative.
A case of Cryptophthalmus in a male of 40 days old. Note the broad root of the nose, the folds on each side extending to the upper and outer margin of the orbit, the absence of the lids and their appendages.
Cryptophthalmus

Operation.—At the urgent request of the parents, a surgical attempt was made to "open the eyes" of the child. A linear horizontal incision was made over the left eyeball where the normal palpebral fissure should be. The skin was thin and delicate, and the subcutaneous tissue contained a considerable amount of fat. No muscle fibers of the lid, nor any tarsus, were recognized, in dissecting and in undermining the skin some distance away from the incision. Beneath the subcutaneous fatty tissue, there was a very thin tissue-like membrane, which extended backward to form the anterior wall of the eyeball. This membrane was opened. Within the small space was found a small grayish-red and opaque nodule approximately 9-10 mm. in diameter—evidently an undeveloped or malformed eyeball. No cornea was seen, and there was no evidence of a conjunctival sac. The cut edges of this membrane were sutured to the margin of the incised skin with the hope that a union of these structures would give the patient artificial palpebral fissure, and would make possible the formation of a socket later. However, the wound closed on the following day and the operation was unsuccessful.

A few days later, a similar operation was performed on the right side. The subcutaneous tissue was thicker than that of the left eye. A similar membrane covering a grayish-red, more or less smooth and soft nodule was found. In view of the failure of the operation performed on the left eye, this mass was removed. It was deeply situated within the orbit; its softness and elongated shape anteroposteriorly made the enucleation rather difficult. No normal ocular structures were detected with the naked eye. A small piece of skin was removed for examination, and the wound was closed with silk.

The mass and the skin were fixed in Müller's fluid and embedded in celloidin. The following anatomical notes were taken from the writer's note book. As the Hunan-Yale Medical College was disorganized during the trouble in 1926 when the writer was in Europe, the specimen is not obtainable, and the description, therefore, is rather brief, but will show some of the main facts.

Anatomical Examination.—The eyeball was represented by an elongated, irregular mass, measuring 10 mm. anteroposteriorly, and 5 mm. horizontally and vertically. It was collapsed.
Microscopical examination of the skin covering the eyeball, showed normal stratified epithelium with normal corium. In the subcutaneous space was found a thick layer of subcutaneous fatty tissue, with some blood vessels. There was no evidence of muscular tissue, no sign of tarsus, or Meibomian glands.

The eyeball as a whole was very rudimentary. There was no corneal structure visible anywhere in the anterior segment of the mass, which was made up of a layer of loose connective tissue, with a few elongated cells. The parallel arrangement, such as in the normal corneal lamellae, was not recognizable anywhere in the sections. There was no epithelium and there were no blood vessels. The loose tissue layer was continuous posteriorly with the wall of the bulbus and formed the anterior quarter of its wall. The posterior wall of the bulbus was made of a denser connective tissue which in every respect corresponded to the normal sclera. The bulbus was opened posteriorly (artificially by operation).

There was no anterior chamber. Behind the anterior loose tissue layer was a single layer of tall epithelial cells (the lens epithelial cells?), which partially bound a small cavity occupying the anterior part of the eyeball. This was apparently the lens capsule, and it was filled with some homogeneous substance. It was irregular in outline, and except posteriorly touched the surrounding tissue. There was no trace of iris tissue, and no pupillary aperture. The perilenticular vascular coat was not found. On both sides of the lenticular space was a layer of pigmented epithelium thrown into numerous folds, the rudimentary ciliary body. This pigmented layer continued posteriorly forming the pigmented epithelial layer of the choroid, which was fairly well developed, although different layers of vessels were not recognizable, and which contained numerous vessels with many chromatophores. The retina was very rudimentary. Only the nuclear cell layers could be recognized and neither ganglion cell nor the rod and cone layers were visible. The vitreous body had escaped during the operation. The optic nerve was not present in the specimen.

**Discussion**

This case represents a typical case of bilateral cryptophthalmus with microphthalmus. The chief characteristics of
the condition are the absence of the lids with all their appendages, such as tarsus, cilia, and Meibomian glands; the probable absence of the lacrymal apparatus, of whose presence we are uncertain; and the arrested development of the eyeball, including the absence of the cornea and iris, and the presence of the rudimentary lens, ciliary body, and retina. The development is very much retarded if not completely arrested in the anterior segment which is still in the stage of secondary eyecup, with the beginning of the formation of the lens epithelium. The formation of this particular condition from the standpoint of anatomy must be rather early in the embryonic life (about 10-12 mm. embryo). The arresting of development must be previous to the appearance of the iris structure. The unknown cause which has prevented the normal differentiation into the various structures of the anterior segment of the eyecup, without interfering with those of the posterior segment, cannot be easily ascertained. Any malformation is of great interest from the morphological as well as from the embryological point of view. Many theories have been advanced from the anatomical standpoint, on study of which one is confronted with contradictions. There are, however, three plausible theories so far advanced.

The first or inflammatory theory is held by many authors, and places the appearance of the condition late in the stage of the embryonic life. According to this theory, the lids are normally budded, and closed as in a normal embryo. Then from an unknown origin, possibly endogenous, comes an infection of the embryonic eye, which leads to an ulceration of its anterior segment. The extension of this infection may be so great that a panophthalmitis is developed, which naturally disturbs the further development of the anterior segment of the eye. The closed lids may eventually become adherent to the ulcerated part of the eyeball. According to this theory, cryptophthalmus is a simple congenital symblepharon and ankyloblepharon. This hardly fits in with our case, where we found, as most other authors have done, no evidence of inflammatory products, such as a scar or the dissemination of pigment in the skin or elsewhere in the anterior segment of the eye. Any infection that gives such an after-picture as a bilateral cryptophthalmus must certainly leave some trace of inflammatory products. If there is an infection, it must be endogenous in origin, and this symmetrical cryptophthalmus is not a probable
result. On the other hand, it seems quite absurd to think that an entrance of organisms can be possible through embryonically closed lids.

The second theory, which is perhaps more probable was first described by v. Hippel. According to him, the cryptophthalmus is a result of arrested development of the eye produced by certain external mechanical force. This force is the pressure of the amnion upon the region of the eyes during the second month of embryonic life, when the lids are just beginning to bud. The amnion may press on the entire area of the eyes, and as a result completely arrest the budding of the lids. If, however, the pressure should be exerted unequally, then a partial cryptophthalmus, or rather, a symblepharon or ankyloblepharon will probably be the case. This theory, based on v. Hippel's own case, in which the condition which was different from our case was atypical, and in which some remnants of the lids were still present, may explain others of the atypical cases which have been described in ophthalmological literature.

The third theory was held by Ginzburg, who after the anatomical examination of a complete eyeball enucleated in a case of cryptophthalmus, and after a study of all the reported cases, concluded that the failure of the lids to bud out was secondary to a retarded development of the embryonic lens. In all the cases, he found, the lens was very rudimentary. He advanced this theory on the basis of Lewis' experiment:

"1. If we transplant in certain developmental stage an embryonic eye under the skin of any other part of the body than its original place, the skin will be capable to differentiate itself into the structure of a cornea.

2. If we artificially transplant the lens vesicle and the eyecup, then the development of the cornea will be complete.

3. If we transplant artificially the eyecup without the lens vesicle, or the lens vesicle without the eyecup, then there will grow out of the mesoderm and ectoderm only a rudimentary cornea."

Ginzburg concludes from these experiments that the capacity of the epidermic cells to differentiate themselves into the normal corneal structure depends entirely on the normal
development and normal proportion of the lens to the eye cup; and that if, for some reason the development of the lens has been hindered in the early stage of the embryonic life, the lens remains as a lens vesicle which has not been separated from the epidermis. The invagination of the lens as in a normal case is not possible, and the development of the lens is arrested, while, on the other hand, that of the posterior segment keeps on progressing. This non-separation of the lens vesicle from the epidermis naturally prevents the ingrowth of the mesoderm, which is essential for the structure of the corneal stroma as well as of the iris stroma. When the epidermis is not differentiated into the normal cornea because of the non-invagination of the lens vesicle, then there is no impulse to the metamorphosis of the epithelial cells into the budding of the lids. As a result, the epidermis is not differentiated into the structure of a normal cornea, and the eyeball remains covered over by the skin. He concludes that in his case, the non-invagination of the lens vesicle was the primary factor, and the non-development of the lids was only secondary.

In the case under discussion, we also found no evidence of corneal stroma, no anterior chamber, and no iris tissue, and the lens was only very rudimentary. The condition, therefore, may be considered analogous to that of Ginzburg's case. The cause of the non-invagination of the lens vesicle remains to be discovered.

**Literatur:**


THE PRACTICE OF MIDWIFERY IN MANY LANDS

IV. ENGLAND.

The Editor has been singularly fortunate in the sources of his material from England. Sir Francis Champneys, Chairman of the Midwives Board for 24 years, has provided him with much information as well as writing him a personal letter giving his opinions on the problems at issue and on the value of the training in practice. There is no higher authority in England on the matter.

The Editor has also received very full information on the subject from Miss Musson, Chairman of the Central Nursing Council and Treasurer of the International Council of Nurses. Miss Musson has very generously made enquiries from the leading nursing authorities in England on the question of the training of midwives and has sent the replies which she has received and from which quotations will be made here.

The Editor considers that the simplest method of dealing with this material is first to outline the course of training provided for midwives in England and then to quote from the letters of those who have had a particularly wide experience of the results of this training.
It is now many years since the licensing of midwives was enforced in England and there has therefore been ample time to judge whether the training of women not possessing a nursing qualification is followed by the dire results that have been suggested would inevitably follow such a scheme.

I. THE COURSE OF TRAINING FOR MIDWIVES.

(a) General instructions. Taken from a memorandum (April, 1925) on certain new rules issued by the Central Midwives Board.

*Education.*—While recognising that the woman who is to play so responsible a part in the maternity service must start with an education not merely sufficient to enable her to fill up notifications and keep records and understand the rules under which she works, but such as will enable her to make the fullest use of her training, have an educative influence on others and maintain the high standard of conduct expected of her, the Board has felt it difficult to lay down any hard and fast educational standard, and has preferred to throw on the teachers the onus of satisfying themselves that the pupil, before being accepted, has sufficient general education to enable her both to pass the Board's Examination and afterwards to fulfil the obligations laid on her by the Midwives Acts. This allows the teacher either to refuse to undertake the training of an illiterate pupil or to refuse at an early stage in her studies to continue her training as soon as the inadequacy of her education becomes obvious. Unless teachers make a point of satisfying themselves of the sufficiency of education, a hardship may be inflicted on otherwise deserving women, who may find, after an expenditure of time and money they can ill afford, that they are not equipped for the profession of a midwife, and may be refused admission to the Oral Examination.

*Moral Character.*—It being the duty of the Board to be satisfied so far as can be that those women entered on the Midwives' Roll should not only be professionally competent but also physically, mentally and morally fitted to undertake responsible duties, it is incumbent on all approved teachers to assist the Board in this direction by assuring themselves that no obviously unfit or undesirable person is sent up to the Examination.
Practical Experience.—Particular attention is drawn to the certificate of "having examined and received instruction in the supervision of not less than twenty pregnant women, including booking and keeping of records."

Although the personal delivery of twenty cases is the minimum required by the Board it is expected that each pupil will deliver more, especially in institutions with a small number of cases. It is clear that in the large institutions with a constant succession of cases and manifold resources and activities, those under training are much more occupied throughout their term of service with matters obstetric than in the smaller institutions; in the latter more cases should be given to each pupil to compensate for the less continuous experience and less frequent impressions. The less intensive character of the training is the reason why, with a small number of cases (e.g. at the rate of one daily or, say, 300 per annum), the number of pupils allowed to be trained at one time is limited to a number much below that calculated on the basis of twenty allotted to each, and training institutions and teachers should bear in mind that, when granting approval, the Board will exercise its discretion as to whether or not a condition limiting the number of pupils to be trained at any one time shall be imposed.

No Rule is made as to how the cases to be personally delivered are to be distributed over the period of training, because the Board wishes to allow as much latitude as possible to training bodies. A previous ruling by the Board that the cases should not be crammed into a few weeks but should be spread over at least three months may be taken as a working basis and modified to meet the needs of the individual pupil and the conditions under which her training is conducted. The problem will be a simple one in large institutions with a constant succession of cases and large numbers of pupils. The woman without previous nursing training will require as long as possible to become thoroughly imbued with the ritual of surgical cleanliness by the nursing of patients and in assisting senior pupils in the labour ward, before learning the actual delivery of the patient. While conducting her indoor cases she will also acquire experience and learn her duties by assisting others and witnessing many labours, until judged competent.
to undertake outdoor cases and then will be able to conduct her final cases under less obvious supervision so as to acquire self-reliance.

**Self-Reliance.**—There is one aspect of the teaching of the pupil-midwife for which no rules or regulations can be made, and of which there is no possibility of testing a candidate's capacity by examination, and that is, training in resourcefulness, self-reliance and the ability to take responsibility. It is essential, however, that all teachers should remember that their pupils are not equipped to undertake the office of midwife till these qualities have been acquired, and that their methods are at fault unless adapted to develop and bring out such qualities. In the later part of the training, therefore, it is important that supervision should become less obvious, that opportunities should be found to leave the senior pupil to her own resources but with assistance within easy call. Every teacher must decide in regard to each individual pupil when and how far the close supervision necessary at first can be relaxed with safety to her patient. Those who merely teach the subjects of the syllabus and the practice of midwifery may fail to develop in their pupils the qualities that will enable them to become efficient midwives. Only by constant effort and thought as to how each of her pupils can be made into a safe and efficient midwife ready to take her place in the maternity service can the teacher make the dry bones of these Rules live.

The pupil should be encouraged to study the temperament and character of her patients and their domestic and social circumstances, so that she may have an understanding both of the individuality of her patient and of the conditions in which she lives and has to rear her family. The successful teacher has the faculty of imparting to her pupils something of that power of securing the confidence of and influencing for good those who come under her care at an impressionable moment of their lives.

**SPECIMEN SCHEME FOR TRAINING**

The Board recognises the impossibility of laying down any set scheme for the longer and better training of midwives in view of the varying conditions under which such training must be conducted, and does not desire to interfere with the individual characteristics of teachers and schools. The following
suggestions are to be regarded merely as a guide for those who have to organise training on the basis of the new Regulations, and not as a hard-and-fast system.

The Board will be glad if the schools will submit their schemes as revised to meet the new conditions before October 1, 1925.

A. (Previously Untrained Woman) One Year Course

The greater part of the training should preferably be in hospital.

First Three Months.

Theoretical. Ample time should be given to grounding the pupil in:—

(1) Elementary anatomy, physiology, hygiene and the principles of surgical cleanliness.

(N.B.—A month's preliminary training in these subjects, and in such practical work as can be taught before ward-work, is desirable).

(2) The elementary anatomy and physiology of the reproductive system, the foetus and infant. The physiology, diagnosis and management of normal pregnancy.

Practical.—The practical work should be in the lying-in wards, the nursery and ante-natal department. Bedside teaching and demonstrations should be held daily. The classes should be arranged at times when the pupils are not fatigued after a long period on duty. The practical work, which will include methods of disinfection, nursing details, breast-feeding, care of the infant and lying-in mother, etc., should be under rigorous supervision, and during this time little or no responsibility should be laid on the pupils. In the ante-natal department the pupils should receive instruction in the hygiene and examination of pregnancy, the testing of urine, pelvimetry, etc.; stress should be laid on the normal and physiological conditions.

Second Three Months.

Theoretical.—The abnormal puerperium, the abnormal baby, the signs and symptoms of abnormal pregnancy—stress to be laid on the importance of early recognition of, and methods of preventing, departures from the normal.
Practical.—The pupils should be given increased responsibility in the lying-in wards (including night duty). They should keep charts (mother and baby), gain practice in note-taking and giving verbal reports, give enemata, douches, pass catheters, act as "special nurse" to delicate babies and sick mothers, prepare invalid dishes, artificial feeds, administer medicines, etc. Supervision should be relaxed only when the pupil is competent. Attendances at the ante-natal clinic, with special teaching on abnormal pregnancies, their treatment, the taking of histories, should continue. The pupils should watch the course of labours, attend and assist at deliveries, and receive clinical instruction daily.

Two Months' Labour Ward-work.

Theoretical.—Physiology and mechanism of normal labour. Abnormal labour. Obstetric emergencies and the drugs likely to be required. Care of infants born apparently lifeless. Obstetric operations.

Practical.—The care and observation of women in labour. Assisting more advanced pupils in the conduct of labour. Deliveries (ten to fifteen). History-taking. Observation of abnormal labours and obstetric operations, and the duties of the nurse in such cases. Attendance at a welfare centre, where pupils may learn from the medical officer's consultation not only the weighing of babies but the common ailments of mothers and babies, their prevention and treatment and methods of dealing with difficult breast-feeding.

Last Four Months.—District Nursing and Midwifery.

Theoretical.—General revision. Practical talks on the work of the practising midwife and her rôle in the health service. C.M.B. Rules.

Practical.—Booking of patients. Ante-natal visiting in the homes. District nursing methods. Deliveries on district (five to ten), at first as assistant to senior pupil and later taking a measure of responsibility with junior pupil. Keeping of register and histories. Duties of the midwife according to the C.M.B. Regulations. Co-operation with other health agencies. On call for abnormal cases at the hospital. Visits to clinics, hospitals and museums where practicable (infant welfare, V.D., gynaecological, sick children, disinfecting station, Ophthalmia Neonatorum, etc.). Work with medical practitioners. Etiquette.
The pupil without general training should, if possible, attend two courses by the approved lecturers. The repetition would be valuable.

The Teacher or Sister Tutor should give coaching classes, clinics and demonstrations, and supervise generally the work of the pupil midwives. Detailed records of the pupil's work should be examined regularly and test papers set. Individual attention should be given to each pupil according to her needs. At the end of each quarter, the pupils should have an oral and practical examination on the work covered (including such subjects as palpation, testing of urine, measuring of drugs, preparation of antiseptics, passing of catheter, douching, breast massage, colon massage, irrigation of the eyes and preparation of artificial feeds). Those pupils who have clearly made insufficient progress to enable them to proceed to the next step in their studies should be kept back.

A fortnight's holiday in the year should be allowed to those undergoing the twelve months' training.

B. Trained Nurses Taking A Six Months' Course.

Trained nurses accepted for the shortened course should be told that it is taken for granted that they have a knowledge of elementary anatomy, physiology and hygiene. In some cases it may be advisable to test their knowledge by a paper or oral examination, especially if some years have elapsed since their hospital training.

The greater part of the training should preferably be on the district. The key-notes throughout should be the preventive, the social and the educational aspects of the work. Responsibility for mothers and babies may be given early to suitable pupils.

First Two Months.

Theoretical.—(1) The elementary anatomy and physiology of the reproductive system, the fetus and infant. The physiology, diagnosis and management of normal pregnancy.

(2) The abnormal puerperium, management of the abnormal baby, signs and symptoms of abnormal pregnancy—stress being laid on the importance of early recognition and prevention of departure from the normal.
Practical.—Work in lying-in wards (including night duty), nursery and ante-natal departments. Observation of women in labour and of deliveries.

Third Month.

Theoretical.—Physiology and mechanism of normal labour. Abnormal labour. Obstetric emergencies and drugs likely to be required. Care of infants born apparently lifeless. Obstetric operations.

Practical.—The care and observation of women in labour. Assisting more advanced pupils in the conduct of labour. Deliveries (five to ten). History-taking. Observation of abnormal labours and obstetric operations; duties of nurse in such cases. Attendance at an infant welfare centre.

Last Three Months.

Theoretical.—District nursing and midwifery. General revision. Practical talks on the work of the practising midwife and her rôle in the health service. C.M.B. Rules.

Practical.—Booking of patients. Ante-natal visiting in the homes. District nursing methods. Deliveries on district (ten to fifteen), first assisting senior pupil. Keeping of register and histories. Duties of the midwife in accordance with the C.M.B. Regulations. Co-operation with other health agencies. On call for abnormal cases at the hospital. Visits to such clinics and museums as the individual trained nurse needs. Work with general practitioners. Attendance at labours with junior pupil with a measure of responsibility.

It is highly important that trained nurses should take their district training with teaching midwives of superior education, with a high standard of district midwifery work. Social and ethical problems may be comparatively new to the hospital-trained nurse and she has to acquire confidence in diagnosis and management of normal patients, without a doctor. She must also learn to accommodate herself to district conditions, which may be more difficult to her than to the pupil without general training.

II. THE PRACTICAL RESULTS.

Extracts from letters from those best able to estimate the value of this midwifery training will now be given. It is
interesting to note that at the end of 1926 there were, in England, 62,549 midwives of whom 45,822 were registered in virtue of having passed the State examination. Of the remainder considerably more than half had passed similar examinations before the State examination was instituted, leaving not more than about 10 per cent of midwives belonging to the pre-training days and these are rapidly disappearing. For practical purposes then the midwifery work of the country is now being carried out by midwives trained along the lines already given in the previous section.

It is interesting also to note that for a population of roughly forty million in a country where distances are small sixty-two thousand midwives are required. On this showing China would require at least six hundred thousand and considering the great distances in this country it may be doubtful whether this number would be adequate.

As regards results:

Sir Francis Champneys for 24 years Chairman of the Central Midwives Board writes:

"The training and introduction of midwives has done great good. It has been found quite impracticable to insist on a full nursing course for all midwives, though advantages are given to those who are fully trained. Had we insisted on such a scheme we should have had an altogether inadequate supply of midwives, and the horrors of the untrained woman would have remained unchecked. Our midwives have really done very well, and it would in my opinion, have been quite unjustifiable to limit their numbers by insisting upon a training quite beyond their reach.

A fully trained nurse is sometimes so used to medical assistance that she fails to acquire the confidence which is essential, and has to spend time in getting what her less highly trained sister (in nursing) has already gained.

I think myself that if you had two women starting training together:—

A. becomes a fully trained nurse, B. becomes a midwife under our Rules.

A's training would take 3 to 4 years nursing training plus six months midwifery.
B's training takes a year. At the end of $4 \frac{1}{2}$ years many women of Class B would be far more valuable than women of Class A. Given 6 or 7 years very likely the A's will have caught up the B's.

It is a matter of time and money."

Miss Doubleday, a very experienced Superintendent of Midwives in a Rural District, and who has a great deal to do with training and post-graduate courses for midwives, writes:

"Although a large number of midwives trained in England, possess a full nursing diploma, only a very few of these subsequently practise.*

The midwife (without full nursing training) does very satisfactory work, but I would add that if such a scheme is considered for China, it should be made compulsory from the start that, after the midwifery training is completed, the midwife must have some independent practical experience under supervision before being allowed to practise quite independently. That is: a newly qualified midwife should have someone at her back for a while. It is unfair to the patients and to the midwives to send inexperienced people to work in isolated areas. This is our mistake in England and should be avoided in any other country."  

Miss Rosalind Paget who is a great authority on this particular subject writes:

"As a fully trained nurse I began by feeling that every midwife should also be a trained nurse; after some years I realised that this was practically an impossibility, and I have come to the conclusion that even if it were practicable it is not entirely desirable. I will give on another sheet of paper the results that have led me to come this conclusion. In all cases where the teaching supervision, and training of midwives is concerned experience has taught me that I can still consider it desirable that a woman with such responsibilities should have the wider knowledge of a fully trained nurse and also that of a well-trained and experienced midwife.

*It is important to note this as we have heard suggestions to the contrary made.—Editor.
For twenty-two years I represented the Queen's Institute for District Nursing on the Central Midwives Board and the figures on which I base my opinions are taken from reports sent me from the Q.V.J.I. first in 1905 and which continue to be sent. They amount to considerably over half a million of cases of childbirth, and though this seems very small compared with Dr. Maxwell's statement that fifteen million infants are born every year in China it is enough to be able to take a few statistics from."

Miss Paget adds to her letter the following most valuable notes.

Though at one time considered by some authorities a desirable thing that all midwives should be fully trained nurses it has not been found to be practicable, and, even if it were, not entirely a counsel of perfection.

The advantages of a thoroughly well trained and experienced nurse are that she is supposed at any rate to have a wider outlook on life generally and is therefore better able to advise on subjects of illness and general health; she is better able to recognise diseased conditions and she is supposed to deal with them more effectively from the nursing point of view if far away from her usual director, the medical practitioner. Where she has to teach midwives, it is certainly desirable.

The disadvantages of the trained nurse are that there are not enough who are also midwives to fill the requirements except for the higher branches of teaching and supervising, and that the trained nurse has now to begin her training so young that if she takes up midwifery at once she is not suitable to live alone without supervision, with all the terrible anxieties and difficulties of midwifery practice. She soon loses her nerve, gets to thoroughly dislike the work, and before she has practised long enough to become a useful midwife she gives it up and takes one of the much less responsible and better paid positions that are open to her.

Unless a woman will make midwifery a very considerable part of her life's work she will not become the useful woman that is so much needed. A woman who, for three or four years, has never acted on her own initiative and has always had to refer everything to the House Surgeon or Practitioner is apt to lose her nerve in the face of some grave emergency. A rather
older woman, with more experience of life, is a great deal more suitable and she has much more power with the patients. She has experience other than that of an institution and may be a widow, a wife or a mother, all useful assets.

The figures that I can give are only from rural districts in England. The Queen’s Institute of District Nursing has a very large number of County Associations affiliated to it, where a very great deal of rural midwifery is done by the nurse midwives and the following is the system which has been in operation for more than twenty years and which on the whole has proved to be the best solution of safe attendance on the rural mother of which we have experience.

Every nurse midwife employed is engaged by an Association, placed in a suitable district and supervised by a County Superintendent, who is herself a certified midwife and fully trained in hospital and district nursing: she is often, and this works most satisfactorily, the Inspector of Midwives as well. The nurses employed are called Village Nurse-Midwives, they are not fully trained in hospital but are fully trained and certified midwives; they are also trained in district and rural nursing for at least six months. As they have in their districts very few cases comparatively, owing to the sparse population, they do health visiting, school nursing, tuberculosis nursing, and the nursing of chronic cases under doctors, as well as midwifery. On the whole they work under comfortable auspices, sometimes they are able to have a mother or daughter to live with them; the life is a very lonely one but they often make themselves very happy indeed and become quite the mother of the whole district. It has been found by the Queen’s Institute that this is the most satisfactory way of supplying the need for a useful and safe midwife to the rural population.

We have, of course, a certain number of Queen’s Nurses (who must all be fully trained) who also practise midwifery, but it is often only as a preparation for taking a higher post, that of Superintendent, Inspector, or teacher; in fact, the number of Queen’s Nurses actually practising midwifery (from whom the following statistics are taken, are a negligible quantity) only something like 14 per cent. The Village Nurse Midwives have of late years greatly improved in calibre and are as a rule fairly well educated:—
Our midwives attend their patients during pregnancy and examine them, and if they find abnormalities they advise a doctor, who is supposed to decide whether it is safe for the midwife to take the case or whether it should be handed over to a hospital or to a doctor. The Central Midwives Board rules, which they have to keep and which Dr. Maxwell has doubtless seen, are extremely detailed and very strict, and the midwife has to call in a doctor in innumerable cases during pregnancy, labour, and lying-in. This doctor is paid for by the State. The midwife is taught, or ought to be taught, the best drugs to use in cases where rest of body or mind is required, so that she does not unnecessarily send for the doctor to put on forceps.

We do not give our maternal mortality statistics quite in the same way as the Registrar General gives his. We give the mortality of every mother who has *engaged* a midwife to *attend her* whether she afterwards sends for the doctor or sends the patient to a hospital; we also count in her mortality cases where of emergency the midwife is sent *for first*, even though she sends at once for the doctor, cases where the confinement really seems to have little to do with the death, for instance, from advanced tuberculosis: many of these cases are not, I believe, included in the return of the Registrar General.

On the other hand the Registrar General returns as maternal deaths cases of abortion; our midwives do not, as such, attend abortions. The Registrar General also includes cases of ectopic gestation.

<table>
<thead>
<tr>
<th>Year</th>
<th>Midwives Attended</th>
<th>Mat. Mort. (per 1,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1905</td>
<td>4,500</td>
<td>2.4</td>
</tr>
<tr>
<td>1915</td>
<td>23,453</td>
<td>1.9</td>
</tr>
<tr>
<td>1923</td>
<td>54,554</td>
<td>1.4</td>
</tr>
<tr>
<td>1927</td>
<td>55,960</td>
<td>1.3</td>
</tr>
</tbody>
</table>

You will note how very much our numbers have increased. Our highest mortality was in 1918, (3 per 1,000) the year of fearful influenza, also the year in which wounded soldiers came back to their wives, also the doctors came back.

I think such a good maternal mortality proves that the Queen's midwives, most of whom are not fully trained nurses though very experienced in many ways, are safe and admirable midwives. The maternal mortality in England and Wales has been round about 4 per 1,000 for a long time.
I am troubling you with these figures in answer to your question as to whether it is necessary for midwives to be fully trained nurses.

Miss Musson, herself, writes:

"I am very sorry that I cannot answer your questions about the proportion of midwives being trained in England who possess a full nursing diploma, and the authorities when asked say that this is no guide, as so many nurses take midwifery as an extra qualification because they are obliged to have it for certain posts or for going abroad and without any intention of practising midwifery.

With regard to your question—The employment of women without full nursing training I think may be said to have proved fairly satisfactory, especially from the point of view of the infant mortality.

Clinical Notes

RAT BITE FEVER
Report of a case
H. L. Liu, M.D.
Ming-Sun Hospital
Hofei, An-hwei

For centuries this disease (Rat bite fever) has been known in China and Japan. Some Japanese observers have seized the opportunity to make a number of contributions to medical science about this disease. As we can imagine the frequency of occurrence of this disease in China is probably just as much as in Japan or even might be more on account of the comparatively larger population. However, the report of cases in China has been fairly rare.

1. Etiology and exciting cause.

(a) Etiology. In regard to the etiology it is well known that it is due to some organisms or parasites getting into human circulation through the bite of rats of certain species. As to the name for this organism it is still under discussion. The
most prominent and almost accepted name for the organism known as *Spirochaeta morsus-muris*, suggested by Japanese observers is considered to be the most acceptable one.

However, Horder saw spirilla in his case, Ogata described a sporozoan parasite, Proescher a bacillus. Schotmüller, Blake, Tileston found streptothrix from their cases (see Osler's Medicine). Schotmüller corroborated by Blake named the organism *Streptothrix muris ratti*. Some of the observers now-a-days come to accept *Leptospira morsus-muris* as the name for the very organism (see Stitt's practical Bacteriology).

So it is probably safe for us to say that Rat-bite-fever is a disease, caused by a certain species of organism, transmitted to human circulation through the bite of rats of certain species, clinically characterized by brief febrile paroxysms, skin rash or erythematous eruption and sometimes delirium.

(b) Exciting cause. On the 15th May 1928. Patient's (name Lieu, middle aged woman) little finger of right hand was bitten by a rat while she was attempting to catch it. There was very slight bleeding from the wound but it soon healed up as some tooth powder was applied to it.

2. History of febrile paroxysms.

(1) 1st febrile paroxysm. It was not until June 7th 1928, the affected finger suddenly became red and swollen. The constitutional symptoms began to develop on the following day, starting with sudden and terrible chill, resembling that of malaria fever, general weakness, and muscle pain of both legs. Then followed high fever, and frequent vomiting. The fever lasted about 24 hours and profuse sweating followed which ended the fever by crisis. During the 9th and 10th of June, patient did not complain very much except of general weakness and anorexia.

(2) 2nd febrile paroxysm. On the 11th June patient again had chill followed by fever. Then chill and fever again, thus alternating for a number of times. Vomited several times during 11th and 12th. By the 13th the fever was gone and patient felt well again. However this attack seemed to be much heavier than the first one, and patient was much distressed by it. In the following four days (13th to 16th) patient was quiet, and complained of nothing.
(3) 3rd febrile paroxysm. On 17th June, the attack suddenly came on. The duration of chill was shorter and attack milder than before, but the fever and vomiting were much more severe. The appearance of patient was anguished and melancholy. The vomit was examined and was found to be mixed with bile. Fever was 104.5°F, pulse full, forcible, about 120 per minute. Blood smears were taken for malaria parasite but the result was found negative. The affected finger was red, hot and swollen but not ulcerated. Axillary lymph glands of the affected side were palpable and tender. Slight tympanites of the abdomen, the tongue was dry and thickly coated with grayish white fur. No skin rash nor erythema observed in any part of the body. The patient at this time was treated symptomatically, because the diagnosis could hardly be given. As soon as the fever was gone, profuse sweating followed. Then chill and high fever again and delirium abruptly set in. In the afternoon of 18th the temperature reached normal and the patient felt very much exhausted and distressed. During 19th to 21st patient felt well again except that her appetite was impaired.

(4) 4th febrile paroxysm. In the night of 22nd patient had another attack of chill, fever, and vomiting, accompanied by delirium. On 24th fever 104°F, pulse about 100, the affected finger was much worse than before but yet not ulcerated. On both medial and lateral aspects of right arm (the affected side) there were red, indurated, swollen masses, painful on touch, somewhat like cellulitis. Thus the motion of right elbow joint was much limited on account of pain. Three enlarged painful lymph glands found in the right axilla.

Now the skin rash or erythema was exceedingly marked by the intense erythematous spots. Roughly estimated over the whole body they amounted to 70. Some of these were quite big while the rest were small. The diameter of the biggest measured 250 mm. and of the smallest only 5 mm. The erythematous spots were thickly crowded on the upper extremities especially on the affected side. Next was on the neck, face and scalp. Some were on the external surface of eyelids and lips but very few on the trunk and lower extremities. The individual spot was swollen, indurated, slightly elevated, red in color, yielding to pressure. Both legs had pain in muscles and also in bones but were free from erythema.
3. Treatment.

With the history and clinical symptoms developed so far, the diagnosis of Rat bite fever was hardly in doubt. So on the morning of 23rd June, I injected one dose of Neo-salvarsan (0.45) intravenously. Within four hours of the injection, the temperature of patient remained still between 104° and 105°F, pulse about 120, the color of the erythematous spots became more intense, and the number of spots was most likely increased to some extent. Later on the fever dropped down gradually to 102°F in the night and reached normal at 5 a.m. of the following day (24th June). As an effect of injection of Neo-salvarsan, vomiting was stopped, the swelling of the affected finger subsided, the erythema disappeared, the swollen, indurated masses on right arm became smaller and smaller, and the pain of the mass was entirely gone. The enlarged lymph glands in the right axilla disappeared and the motion of right elbow joint was restored.

For three days the patient had constipation, a dose (gr. iii) of calomel was administered and a bowel motion followed not long after. In order to restore the appetite of patient some form of stomach tonic was administered.

On the 27th June, the patient was examined again, and it was found that the swelling of the affected finger had entirely disappeared, and the erythematous spots were all disappearing except some faint, pink-stained traces which were still visible. The indurated swollen masses on the right arm, and the enlarged lymph glands of right axilla had altogether disappeared. In order to prevent a relapse and another febrile attack, another dose of Neo-salvarsan was injected in the same way as before. Since then the patient has completely recovered.

4. Summary.

(1) Incubation period—Twenty-two days (15th May to 6th June).

(2) Clinical symptoms and signs—(a) General symptoms—Four febrile paroxysms observed, the period of attack varying from 1-3 days, the interval between attacks ranging from 2-4 days. Vomiting, pain in muscles of the legs, exhaustion, anorexia and delirium. (b) Local signs—The affected little finger inflamed but not ulcerated at all. The axillary lymph
glands of the affected side involved, the arm of the affected side inflamed and bearing most of the erythematous spots.

(3) The erythema began to appear during the 4th febrile attack (half a month from the onset, 7-22 June).

(4) Some of the febrile paroxysms gave chill, fever, chill and fever again, thus alternating for several times before temperature reached normal.

(5) Anti-pyretics do not seem to have much effect upon the fever. Neo-salvarsan is the most satisfactory remedy so far.

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**ISCHIO-PAGUS**

*(Blazik Twins)*

S. Y. SING, M.D., C.M.S. Hospital, Pakhoi

The twins, together weighing only 6 lbs were 18 days old on the day of admission and were born in Limchowfu, a city two miles away. They were brought into our Hospital for medical treatment by the wet nurse and two other men on June 25th who complained that the babies had ceased to suck. Interrogation revealed that the mother aged 33 had 4 previous pregnancies and this, the last was the 5th labour when she was delivered of a pygopagus, all being females. The other baby, with her mother at home, was doing well.

Examination of the twins revealed that there was only a single anus and a single vagina. (see picture 2) Owing to the absence of an X-Ray apparatus which had been removed to another hospital belonging to the Mission in Yunnanfu, it was not possible to study the exact position of the twins’ vertebrae which seemed to be one and jointed at the base, although each had its own sacral bones. The two foreheads and faces were badly disfigured by cauterisations, a practice which the local people lavishly employ to treat infantile ailments.

The twins were taken away on June 28th, patients on leaving were much benefited by the treatment. They were put on milk diet throughout the period of their stay. It was regrettable that the twins could not stay longer to permit a closer study as pressure of hospital work only allowed very little leisure and attention to be devoted for investigation.
The cause of the sudden departure was due to the fact that the babies had been sold to a company of local men who were eager to take the twins with them on tours for lucrative gains.

This pair of twins was last heard of about 2 weeks ago at On-po, a town about 15 miles away from here. They were reported as still living, one of them being quite healthy and robust while the other was somewhat sickly-looking.

Two photographs are enclosed.

No. 1 showing the fronts of the twins and natural position of repose.

No. 2 showing the backs of the twins,

Note the anus and the position of the vertebrae at the base.

DYSTOCIA FROM GAS GANGRENE

S. P. SEATON, M.D.
Hoihow, Hainan

A multipara, age 30, at term, had been in labor 16 hours before entering the hospital. At home the membranes had ruptured and a native woman had put her hand in the vagina. On entering, the mother's temperature was 104°. The foetal heart was not heard. The position of the child was R. O. A. The external pelvic measurements were normal, the blood-pressure was 134/80. The cervix was dilated 4 cm.

The labor proceeded slowly until after about six hours the head was born. Then difficulty was encountered in extracting the body. While applying traction on the neck the body suddenly shot out with a burst of gas and a spray of bloody fluid. The foul smell of gas gangrene filled the room.

On examination of the foetus it was found to be dead and the subcutaneous tissues everywhere crackled with gas. The reason for the dystocia was the gaseous swelling of the body of the foetus. The child was a female.

The mother lost a good deal of dark blood immediately after delivery. The next day her temperature was down to 99°. It went up to 100° every day until the sixth day, when it went
Ischio-pagus

Ischio-pagus
to 101°. By the eighth day it was normal and did not go up again. The mother had no other symptoms and was discharged well on the fourteenth day.

There is no extensive medical literature here in which to look up the incidence of gas gangrene in utero, but obstetrical text-books give it as an occasional cause of dystocia.

A NEW SERUM TEST FOR KALA-AZAR

A brief synopsis from Napier's book on Kala-azar. p.122 *

Major Chopra, I. M. S., has recently discovered that a precipitate was produced when the serum of Kala-azar patients was added to a solution of certain of the pentavalent compounds of antimony used in treatment.

Napier has made further investigations with this reaction and summarises his experience as follows:

(1) The amount of the precipitate appears to vary in direct proportion with the efficacy of the compound for treatment.

(2) The results obtained are closely parallel to those obtained with the aldehyde test and may be relied on except in the earliest stages of the disease.

(3) The reaction power of the serum develops if it is kept for 24 hours.

(4) The reaction occurs with very weak solutions of some compounds, and with comparatively weak solutions clearer cut results can be obtained.

Napier recommends the following technique:

To 2 c.c. of a 0.25% solution of Stiburea in distilled water (or 0.1% solution of No. 693) add two drops of 24-hour-old serum; agitate the tube to mix the contents. In a case of kala-azar a heavy flocculent precipitate will form, which within 15 minutes will settle, leaving a clear fluid above; if a fine

*See Book Reviews in this issue.
precipitate forms which does not settle within this period, the result should be considered doubtful; with a normal serum the solution will remain absolutely clear.

Freshly prepared serum will give equally good results, but with this it is advisable to use a 1% solution of Stiburea (or a 1.25% sol. of No. 693).

Napier states that his experience with this new test has been limited, but says there are indications that it will give clearer cut results than the aldehyde test, especially in cases where the serum is milky.

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TWO INTERESTING CYSTS
N. D. FRASER M.B., Ch.B., D.T.M.

Dermoid Cyst
Report of a case of Dermoid cyst in the left broad ligament.

Name    Lu Lak.
Age     23. Married 7 years. 1 boy 2 girls.
Address  Swatow.
Occupation Handling of charcoal.

History.

Four years ago when she gave birth to a girl, she was told by a doctor that a tumour was present. Some loss of weight followed.

February 1928 a boy was born, forceps delivery being necessary, due to the obstruction caused by the tumour.

October 1928 patient came to hospital and was admitted for operation.

Vaginal examination revealed a tumour, about the size of a foetal head, pushing forward the posterior vaginal wall. The tumour felt somewhat like a foetal head as flat bones and 'sutures' could be plainly made out. The tumour was freely moveable, but could not be lifted from the anterior surface of the sacrum.

Provisional diagnosis.

Dermoid cyst in the retrovaginal tissues.
Clinical Notes

Operation. Nov. 3rd 1928.

Median incision extending from umbilicus to pubis. On exposure of the pelvic contents the right ovary was found to be cystic, and was about the size of a ping-pong ball. The left ovary was absent, but the left broad ligament and the pouch of Douglas were lifted up by the tumour lying in the retroperitoneal tissues. The peritoneum was incised, and the tumour removed without difficulty. There was no pedicle. The soft tissues were drawn together and the peritoneal wound closed.

The cyst in the right ovary was then opened and a haemostatic suture inserted. The abdomen was closed, and a firm pack inserted into the vagina.

The day following the operation the patient appeared to be in considerable distress, so the vaginal pack was removed, and a flatus enema given. This relieved the patient considerably and her condition improved satisfactorily.

Specimen. The specimen was full of pultaceous matter and hair. Two well formed teeth were also present, and several distinct plates of bone could be made out.

Query. In this case what is the relation between the absence of the left ovary and fallopian tube, and the presence of the dermoid?

Had the dermoid arisen in the ovary, and grown downwards between the folds of the broad ligament, instead of the more usual way into the peritoneal cavity, would there not be some sort of pedicle, or firmly attached base to the cyst? Of this there was no sign. The cyst was surrounded by loose fascia; and after its removal no blood vessels were ligated.

Ovarian Cyst

Report of a case of Ovarian Cyst occurring in a girl of 13 years of age.

Age. 13.
Address. Theng Hai near Swatow.
Occupation. Student.
History.

In December 1927 patient suffered from a severe attack of pain in the abdomen which lasted several hours. On this occasion the tumour was felt in the abdomen, and could be moved from side to side.

Loss of appetite and progressive wasting and weakness followed.

In February a Chinese doctor tapped the abdomen and drew off over 30 lbs of thick glairy fluid. Before tapping, the whole abdomen was distended and was causing the patient considerable discomfort.

In April tapping was again performed, and in August 90 lbs of glairy fluid was withdrawn.

In October relatives of the patient were persuaded to bring the patient to hospital, when she was admitted for operation. At this time the whole abdomen was distended, and the multilocular nature of the cyst was observed.


A long median incision. Some adhesions to the anterior parietal peritoneum were separated, and several small omental adhesions were ligated and cut.

One cyst was then tapped, after which the remaining mass was removed intact. The pedicle was extremely broad. The skin wound was closed with a continuous subcuticular cat-gut suture, and a few silk-worm-gut sutures. The latter were removed on the 8th day after operation.

The specimen showed numerous multilocular cysts, both large and small, and several areas of solid tissue at the line of union of the cysts. The fluid was the same throughout all the cysts—thick glairy mucus.

I am much indebted to Dr. Ross for permission to operate on, and to report these cases; to Dr. Ross and Dr. Worth for their assistance at the operations; and to Dr. Chang Pu Chow for the histories.
LEPROSY

We do not apologise for so frequently referring to the subject of Leprosy in these pages. The disease is one of the most definitely preventable diseases that we have in our midst and being such it ought to be prevented without delay and this country rid of its lepers.

There is no time so good as the present, when the Government of China is being overhauled in all directions, to make the appeal that both official and private bodies take cognisance of the state of things with regard to leprosy in China and combine to eradicate the disease.

The paper on the subject that we publish in this issue, by kind permission of the Faculty of Lingnan University, is a contentious one and is intended to be such in the hope of rousing both interest and discussion. With the conclusions especially as regards segregation there is room for considerable differences of opinion but what is certain is that if segregation in any form is to be enforced it must be done in the spirit of service for the lepers themselves as well as for the community at large. Anything short of this is not only intolerable to the conscience of the twentieth century but entirely defeats its own end by driving into hiding the early and most curable cases of the disease.

This is a matter on which no two opinions can exist and we desire to emphasize it in view of the fact that we have recently seen a Government leprosy settlement where the spirit of service for the lepers themselves was almost totally lacking. Places such as these become not merely a disgrace to the country but equally a menace to the health of the community as regards the very disease from which protection is being sought.

The Kahn Test

A further paper by Dr. Lai is of especial value as giving his experience of the Kahn test in lepers. There is a good deal of confusion in regard to the serum test for syphilis in leprosy. Formerly it was definitely stated that the Wassermann reaction
was positive in a large percentage of lepers. Further investiga-
tion proved this uncertain and the Kahn test did not follow
the Wassermann reaction. The whole matter requires clearing
up and we would suggest that if others interested in leprosy
work would investigate this problem and give us their findings
also, we should soon be able to settle the question, for China
at least.

There seems little doubt that in certain cases of advanced
nodular leprosy the reaction is positive apart from syphilis and
a very valuable line of investigation would be to determine
what the effect of treatment of the leprosy has on this reaction.

The whole question is one of no little importance as regards
treatment. It has been amply proved that one of the most
important elements in the cure of leprosy is the cure of
co-existing diseases, and this should be undertaken before the
specific treatment of the leprosy itself. The problem of doing
this is considerably complicated if the serum reaction for
syphilis in lepers is to be regarded as of little value.

Alepol

The promise that Alepol should be painless on intramuscular
and hypodermic injection has not so far proved true. We have
however recently received a letter from Dr. Robert Cochrane
to whom we referred this matter.

Dr. Cochrane suggests two reasons as the cause of the
pain:—1. Ionisation in too weak a solution. 2. That the
addition of strong carbolic acid throws down some of the fatty
acids. He suggests that this may be obviated by using a
4 per cent in place of the ordinary 3 per cent solution and that
in preparing a quantity for injection the Alepol be dissolved in
one half of the water, that the carbolic acid be dissolved in
the other half of the water and that the two be mixed after
complete solution has taken place.

THE 1929 CONFERENCE

We are particularly anxious to keep the forthcoming Con-
ference fresh in the minds of the members of the Association,
as it is especially desirable that we should have a large and
representative gathering on this occasion. A provisional programme of the meeting will be found in the section devoted to Association News.

As has been already mentioned the Committee is trying out a new scheme to meet to some extent the objections of those who find that different sections meeting at the same hour cover subjects of wide general interest, from participation in the discussion on some of which hospital doctors who do not specialise, or rather who have to be all round specialists, are necessarily excluded.

To obviate this to some extent, sectional meetings are confined to the afternoons while each section in turn gets a morning session to bring forward some subject of universal importance.

The subjects chosen for these general discussions appeal very strongly to us and we believe will do so to the members at large. They are, so far as has been already decided, as follows:—

Medical Section
Splenomegaly.

Surgical Section
Cancer in China.

Obstetrical & Gynecological Section
Obstetrical Practice in the light of Modern Advances in Diagnosis and Treatment.

Ophthalmo logical Section
Keratomalacia in China and its Relation to the Whole Body.

Public Health Section
Governmental Health Organisations.

It would be hard we think to find subjects of wider interest than the foregoing and we trust that the papers on these will lead to interesting and valuable discussions.

Under the title of Announcements, in the pages of this issue devoted to Association News, will be found further details of the subjects for the Sections and careful attention to these is asked. The Physiological Section is undertaken by the Physiological Society of China and a notice in regard to the meetings of the Society is also included in these announcements.

One or two of the Secretaries of Sections are complaining that it is particularly difficult this year to get members to contribute papers for the Conference. This of course is hardly surprising as the number of hospitals that have been more or less closed during the past biennium is large and the material to work on is correspondingly reduced. We therefore make a special appeal to those who are able to do this to contribute
papers to the different sections and to communicate at once with the Secretaries of the Sections informing them of the papers they are prepared to contribute. The Secretaries of the Sections are busy men like ourselves and their work for the Conference is a labour of love in which they deserve the full support of the members. We therefore issue this as a strong appeal on their behalf.

The Trade Exhibit will be an especially valuable one on this occasion. The exhibitors have taken the matter up very heartily and a splendid show is assured. This is a matter of considerable importance this year when so many hospitals are refitting or making plans for the future. We would call the special attention of hospital superintendents to the unique opportunity that such an exhibition affords.

To bring the matter more clearly before our members we have arranged to reserve the first page of advertisement matter after the general reading matter (the page next after the notice of proposal and election of new members) for notices from exhibitors with regard to the material that will be displayed during the Conference.

MIDWIFERY TRAINING IN ENGLAND

Through the generous help of many friends we are enabled to add to our series on The Practice of Midwifery in Many Lands a paper in this issue on the training given in England. This is an exceptionally full and valuable report and we would call the special attention of all interested in the matter to the information that it contains. It deserves careful study as regards both the courses pursued and the results in practice as viewed by the leaders of the Medical, Nursing and Midwifery professions.

In this case sufficient time has elapsed to allow of a mature judgement being formed and the results are evidently not of the dire nature that are suggested must inevitably follow a scheme of this kind. As a matter of fact the maternal mortality would seem to be lower where such midwives are employed than occurs in the hands of either fully trained doctors or nurses who are necessarily unable, because of other duties, to devote such continued attention to their cases!
INFECTIOUS JAUNDICE (WEILS' DISEASE)

We would draw the special attention of members to the letters from Dr. B. C. Patterson of Tenghsien, Shantung, appearing in the Correspondence Column.

The subject to which Dr. Patterson refers is one of great interest and importance. We have no doubt in our own mind that the disease now prevalent in parts of Shantung is Infectious Jaundice otherwise known as Weil's Disease.

Epidemics of Infectious Jaundice have occurred again and again in China and though as a rule the disease has been of a mild type this has not always been the case and however mild the epidemics may have been as a whole, they have always been attended by a very heavy mortality among pregnant women.

Epidemics have in the past been reported from Chihli, Shansi, North Kiangsu and on several occasions from Shantung.

The etiological agent is a leptospira, *Leptospira icterohaemorrhagiae*. The leptospirae as a class resemble the spirochaetes but have very fine spirals, hooked ends and no flagellae. They are found in the rat and infection of man is almost certainly from this rodent. The leptospira may be found in the blood in the early part of the disease and later in the urine where it is more often sought with success.

As regards treatment, no drug appears to have any specific action and very little is given in regard to treatment in the text books.

We are very anxious to receive further details of the disease in China, its symptomatology and more especially information about treatment, and would ask that some of the physicians in the affected regions would send us material for publication in the Journal.

THE NEW SCIENCE BUILDING, LINGNAN UNIVERSITY

The Editor had the pleasure of being present at the opening of the Willard Straight Science Hall, Lingnan University, Canton, on 19th October, 1928.

The building is a large three-storied block with basement and attic, and is admirably suited to meet the requirements of
The departments of Chemistry, Physics and Biology, which up to this time have had to be accommodated in temporary or improvised quarters.

The President and Faculty of the University are to be warmly congratulated on this noble addition to the many fine buildings that adorn the campus and a further important step has been thereby taken to consolidate the premedical teaching of science which is the part that more closely concerns our profession.

The many guests at the opening exercises were very hospitably accommodated in the houses of the faculty on the spacious grounds of the University.

In addition to the public meetings which celebrated the opening of the new Hall, conferences of those interested in various divisions of science were held during the morning and afternoon. These were divided into sections on the Biological Sciences, Physical Sciences, Medical Science and Papers of General Interest, and if the attendance was as good in the other sections as in that of Medicine they were very well attended indeed. Speaking of the section of Medical Science, the number of papers presented was out of all proportion to the time allotted to the meeting and a more careful selection of those to be read would have made the time more profitable. This is a matter that should receive more careful attention than it does at all our conferences.

In the name of our Association we would offer our hearty congratulations to the Lingnan University on their fine new building and would wish it every success through many generations of students.

Snapshots taken on the occasion and reproduced here give a good idea of the commodious nature of the building.

THE PRAYER CYCLE

Before the next issue of the Journal is published it is hoped that the Prayer Cycle for 1929 will be in the hands of the members of the Missionary Division.

The Prayer Cycle contains a list, as complete as possible, of all the Mission Hospitals in which members of the
Willard Straight Science Hall
Lingnan University, Canton
Opened 19th October 1928
Association are working, arranged in groups for each day over a period of four months so that each hospital may be remembered three times a year.

The first edition printed two years ago received a very warm reception from the members of the Missionary Division and we have reason to believe that it met a real need. In view of the conditions of the country last year it was impossible to publish an edition for this year's use but the state of things now rapidly returning to the normal has made it possible to make another attempt with the result that the present number is now being issued for use next year.

The difficulties to be overcome in obtaining authoritative information in regard to some of the hospitals have been almost insuperable and despite very strenuous efforts to make this list complete some omissions and mistakes are sure to have occurred. For such we ask pardon and for information that will enable us to avoid similar errors in the future.

The C. M. A. Prayer Cycle would seem to be obtaining a very wide reputation. Originally founded on a similar publication by the Medical Missionary Society of India, the method here used so commended itself that this Society returned the compliment by adopting the C. M. A. form of record. We note now that the Dominion Press in London is issuing a directory for Mission Hospitals generally throughout the world and has done us the honour of copying the form of our Prayer Cycle when publishing it.

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INDEX FOR 1928

The Editor would call the attention of members to the fact that the Title page and Index of the Journal for 1928 is included in this issue at the close of the advertisement pages.

This allows of the binding of the present volume without delay and obviates the danger of an index printed as a separate inset being lost.

We call special attention to the fact that the Title page and Index is here included in the hope that it may obviate our having to reply to a number of letters from members complaining that they have not received these, as occurred during January and February of this year.
A provisional programme for the forthcoming Conference is given below. It should be noted that the number of sectional meetings can be increased if papers received warrant this.

It is hoped that arrangements may be made for visits to hospitals, etc. after the close of the meetings of the sections in the afternoon.

A letter has been sent to members within travelling distance of Shanghai asking for early notification of their intention to be present at the Conference. A copy of this is printed after the announcement of the Provisional Programme. If any member, not resident in Shanghai, has failed to receive a copy of this letter will he or she kindly take note of its contents and write us of their hope to be at the meetings.

**XIXTH BIENNIAL CONFERENCE**

Shanghai 6th—13th February, 1928

**Provisional Programme**

**Wednesday, 6th February.** Evening Reception of Members and Delegates by the President and Executive Committee of the China Medical Association.

**Thursday 7th February**

8.30— 8.50 a.m. Devotional Exercises
9.00—10.15 a.m. Presidential Address and opening business
10.30—12.00 General meeting under charge of Medical Section
Subject:— Splenomegaly.
12.30 p.m. Tiffin Navy Y. M. C. A.
1.30—4.00 p.m. Meeting of Surgical Section
" " Obstetrical Section.

**Friday 8th February**

8.00— 8.50 a.m. Devotional Exercises
9.00—10.15 a.m. Reports of Councils &c.
10.30—12.00 General meeting under charge of Surgical Section
Subject:—Cancer in China

12.30 p.m. Tiffin Navy Y. M. C. A.
1.30—4.00 p.m. Meeting of Medical Section
" " Ophthalmology and Rhinolaryngology Section
" " Section of Public Health

Saturday 9th February
8.30—8.50 a.m. Devotional Exercises
9.00—10.15 a.m. Meeting of Missionary Division
10.30—12.00 General Meeting under charge of Obstetrical and Gynecological Section
Subject:—Obstetrical Practice in the Light of Modern Advances in Diagnosis and Treatment

12.30 p.m. Tiffin Navy Y. M. C. A.
Afternoon Excursions and Recreations.

Monday 11th February
8.30—8.50 a.m. Devotional Exercises
9.00—10.15 a.m. Business
10.30—12.00 General Meeting under charge of Ophthalmology and Rhinolaryngology Section
Subject:—Keratomalacia

12.30 p.m. Tiffin Navy Y. M. C. A.
1.30—4.00 p.m. Meeting of Surgical Section
" " Obstetrical Section

Tuesday 12th February
8.30—8.50 a.m. Devotional Exercises
9.00—10.15 a.m. Reports of Councils &c.
10.30—12.00 General Meeting under charge of Section of Public Health
Subject:—Government Health Organisations

12.30 p.m. Tiffin Navy Y. M. C. A.
1.30—4.00 p.m. Meeting of Medical Section
" " Section of Ophthalmology and Rhinolaryngology
" " Section of Public Health
Wednesday 13th February

8.30—8.50 a.m. Devotional Exercises
9.00—12.00 Election of Officers and concluding business
12.30 p.m. Tiffin Navy Y. M. C. A.
Afternoon Final business meeting if required.

Thursday 7th February 9.15 p.m. Public Meeting
Dr. K. C. Wong

Monday 11th February 9.15 p.m. Public Meeting
Dr. J. B. Grant.

COPY OF A LETTER SENT TO MEMBERS

Dear Doctor:

The Nineteenth Biennial Conference of the China Medical Association will be held in Shanghai from February 6th to 13th, 1929.

A reception of members and delegates will be held on the evening of Wednesday 6th February and the work of the Conference will begin on Thursday 7th February, the meetings continuing up to and including Wednesday 13th February.

The general meetings will be held in the Union Church, Soochow Road, and the sectional meetings partly in the Union Church and partly in the Missions Building alongside.

The trade exhibition will be in the large hall of the Union Church.

Accommodation can be arranged at very reasonable cost (from $1.00 to $1.50 for sleeping accommodation exclusive of meals) for members (men) at the Navy Y. M. C. A. close by the place of meeting and for either men or women at the Missionary Home, 4 Quinsan Gardens or at Mr. Beaman's boarding house, 338 Avenue Joffre, during the time of the Conference. Also for Chinese members at the Chinese Y. M. C. A.

The members will be entertained as guests of the Association at tiffin at the Navy Y. M. C. A. during the meetings to give opportunity for further social intercourse.

An effort is being made to ensure the Trade Exhibit being of special value to hospital superintendents who are engaged on the re-fitting of their hospitals after the recent troubles.

A Conference of particular interest and importance is expected and we would urge members to make a special effort to be present on this occasion. In order to make the fullest arrangements for the comfort of visiting members you are requested to notify us as soon as possible using the enclosed post-card stating whether you hope to be present at
the meetings and whether you desire arrangements to be made for your accommodation while in Shanghai. To ensure such accommodation at the houses mentioned earlier in this letter at the special terms offered, notice of your expectation to be present at the meetings and whether you desire provisional reservation in one of these houses should reach me at as early a date as possible, not after the middle of January at latest.

Yours sincerely

JAMES L. MAXWELL.

Executive Secretary.

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**Announcements**

**MEDICAL SECTION**

The Medical Section includes the Departments of Internal Medicine, Pediatrics and Pathology. It is desirous of getting in touch with any physicians interested in these departments, to receive suggestions for the programme or papers on the following or other subjects:

- Anemias in China.
- Primary
- Secondary
- Treatment

- Recent Advances in the Study of Liver Function

- Diabetes
- Diet
- Use of Insulin

- Dietetics
- Special Diets based on Chinese foods.
- Feeding of Children

- Encephalitis Lethargica.

It is desired to make the sectional meetings as useful as may be to the average physician who is not able to limit himself to the work of an internist or pediatrician. Please lend your help to this end. Address communications to the Secretary:

*Dr. Josephine Lawney.*

*Margaret Williamson Hospital*

*West Gate, Shanghai.*
Current Medical Literature

TECHNIQUE FOR LEISHMAN'S STAIN SUITABLE FOR "FIELD" APPLICATION

J. C. Chukerbuti, Captain, I.M.S.
Commanding Indian Military Hospital, Risalpur.

(1) Select an inch of the most homogeneous portion of the slide.

(2) Draw a perpendicular boundary line on either side with a grease pencil, or better with a piece of ordinary candle, which is less expensive.

(3) Pour as much freshly prepared Leishman's stain as will cover the enclosed space, and let it dry thoroughly on the slide, preferably in the air, or over a gentle distant flame.

(4) Hold the slide with a pair of dressing forceps, dip it into methylated spirit kept in a wide mouth bottle always well corked and opened only at the time of carrying out this step, and shake it well in the spirit until the film becomes a greyish pink colour. Too much decolourization will not entail restaining, because even if the white blood cells have lost their nuclear staining, the parasites retain their characteristics. Too little may entail a residual deposit.

(5) Wash in a jet of tap water.

(6) Blot immediately, dry and mount.

(7) If sediment is still present, repeat (4), (5) and (6).
I have not been using any distilled water in staining blood films with Leishman's stain since 27th October, 1927, when I first tried this method and the result is very satisfactory.

Perfectly clean homogeneously stained fields show malaria parasites in bold relief even in their earliest stage. The nuclei of white blood cells are stained deep violet, and the neutro-baso- and acido-philic granules are beautifully shown up.

I have further observed that methylated spirit used for decolourization does not lose its fuel capacity and can be used for lighting primus stoves and burning in spirit lamps.

More than two hundred 1 inch $\times$ $\frac{1}{2}$ inch films can be effectually decolourized by dipping and shaking them in 4 ounces of methylated spirit kept in a wide mouth bottle, well corked and opened only when required, until the spirit loses its decolourizing power but retains its fuel property absolutely intact.

The colour of the stained film will depend on the degree of purity of methylated spirit which should be neutral in reaction.

**Appearance of Parasites and Cellular Elements Stained by this Method.**

- Red Blood Cells—Shades of greyish pink.
- Nuclei—Deep violet or shades of violet.
- Acidophile granules—Red.
- Basophile granules—Deep violet.
- Neutrophile granules—Lilac.
- Blood platelets—Violet.
- Malarial parasites—Shades of blue.
- Chromatin—Ruby red.

This method is not suggested as an improvement on the historical Leishman's technique, but as a rough "field method" to be used where pure distilled water free of CO is difficult to obtain.

(This method is not entirely original, nor does Captain Chukerbuti claim that it is an improvement on the standard method. We are publishing this to draw attention to a method which is particularly suitable for field conditions and which, in our own experience, gives good results.—EDITOR, I.M.G.).

Sprue long has been one of the puzzles of medicine. Whereas some have thought that infection takes place from patient to patient, others have offered as contributing causes tropical residence, high altitude, digestive disturbances, food deficiency, calcium deficiency, streptococci and Monilia. In this country and in the West Indies, Monilia has received serious attention, largely through the influence of Ashford. He has modified his original ideas, however, and now believes that Monilia psilosis is an infection of the gastro-intestinal tract superimposed on glandular insufficiency. Wood has recently found Monilia psilosis constantly present in the stools of persons with pernicious anemia.

The similarity between pernicious anemia and sprue has impressed a number of investigators. It is not surprising, therefore, that the treatment by means of liver and liver extract, which has proved of such great benefit in pernicious anemia, should also have been tried in the treatment of sprue. Ashford has recently used Liver Extract No. 343, N. N. R., in Porto Rico, and his tentative conclusions can be partly summarized as follows: Anemia of sprue in which there is a high color index and fewer than 2,000,000 erythrocytes can be expected to respond to the administration of Minot's liver fraction with a shower of reticulocytes, unless the bone marrow is hypoplastic. This sudden shower of reticulocytes, Ashford thinks, acts as a sort of internal transfusion which within two weeks is followed by a rise in erythrocytes and hemoglobin. Clinical cure, apparently, follows, but the type of pernicious anemia persists for at least two months after liver extract has been administered. The color index remains high and the size of the erythrocytes is still typical of the pernicious type of anemia.

One of the most recent cases of sprue treated with liver extract is reported by Richardson and Klumpp. Their patient was admitted to the hospital in November, 1927, in a condition which they describe as "practically moribund." The number of red blood cells in this case averaged about 400,000 per cubic millimeter, of which 2 per cent were reticulocytes. According to the Tallqvist scale, the hemoglobin was 25 per cent. Variations in size and shape of the erythrocytes were typical of pernicious anemia. The patient was given Liver Extract No. 343, N. N. R., starting with the amount derived from
200 Gm. of liver, and in two days he was subjectively much improved. This amount was later increased. He was discharged from the hospital, Dec. 1, 1927, and on March 22, 1928, when last seen, all of the symptoms of sprue had disappeared, the red blood count was 5,000,000 and the hemoglobin approximately 75 per cent. At that time he was instructed to reduce his dose of liver extract again to the amount derived from 200 Gm. of liver.

Richardson and Klumpp cite from the literature other reports of cases of sprue treated by means of liver. They point out that in Ceylon, liver soup is an old native remedy for the condition, that this fact was known to Castellani and Chalmers, and that liver soup has long been recommended in the London School of Tropical Medicine for use in sprue. The treatment still requires to be borne out by prolonged scientific observation. Nevertheless, it seems that empiric observation in the Far East may have anticipated Western medicine in the use of this remedy, as was the case with ma huang and chaulmoogra oil. One is led to conjecture what might be the results of a modern voyage of inductive pharmaceutic discovery eastward.

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RICE AND WATER

The short heading possibly suggests the diet of a penitentiary but the paper to which it is desired to direct attention deals with the influence of irrigation on the nutritive value of rice. The author, Lieut-Colonel McCarrison,* who has done so much work on dietetic problems in India, points out that, in the Madras Presidency, while beriberi is prevalent in the low-lying, coastal, and irrigated tracts of the north-east coast, it is rare in the hot and humid regions of the west coast. In both localities rice is the staple article of diet; its consumption per capita being approximately the same. The fact that parboiled rice is more generally used in the west than in the east coast districts does not in itself explain the freedom of the west coast people from beriberi, for the parboiling of rice does not protect the east coast people against the disease.

Differences in the other ingredients of the dietary do not wholly account for the prevalence of the malady on the east coast, though they are a contributory cause. In seeking an explanation the author was led to compare the methods by which rice is cultivated in the two localities.

In the east coast district—the endemic home of beriberi—rice is grown under wet conditions, while in the west coast district—where beriberi is practically unknown—much of the rice is cultivated under dry conditions, on what is called "modan" land, which is usually above the limit of irrigation. This "modan" crop is almost wholly rain-fed and does not stand in water as does that which is irrigated. McCARRISON'S previous investigation of the relation of rice to beriberi had shown:

"(a) Rices grown in different parts of the Madras Presidency vary greatly in their nutritive and vitamin values.

"(b) Whole rice, as it comes from the fields and before it is subjected to any of the vitamin-reducing processes—parboiling, milling, polishing or washing—which precede its use by the consumer, is of all cereals so far studied the poorest in vitamin-B; at best it contains little more than enough vitamin-B for its own metabolism. Accordingly, any circumstance operating during the period of growth—be it composition of the soil, manure, or irrigation—which tends to render this poverty the greater, may turn the scale from bare sufficiency of vitamin-B in the diet to insufficiency, and be a determining factor in the endemic distribution of beriberi."

It was, therefore, decided to compare the nutritive values of the same rice when grown in the same locality under wet and under dry conditions. Interesting Tables are given showing the history of the dry and of the wet crop, of the variety chosen for experimentation, the treatment to which these crops were subjected, and the results of the analysis conducted upon them. The feeding experiment was conducted on rats with due precautions, and both the first experiment and a repeat experiment indicated the marked nutritive superiority of the rice grown under dry conditions. The three factors which may have contributed to the result—i.e.: (1) the composition of the soils on which the two crops were grown; (2) the manurial
history of these soils; and (3) the water-supply of the two crops— are discussed and the view is expressed that the water-supply was the predominant influence concerned.

The chemical composition of the two rices differed very slightly, and the differences were not of a nature to explain the contrast in nutritive values. Accordingly, it seemed clear that the vitamin-content of the two rices differed, and that this was the chief factor determining the superiority of the one rice over the other. The author's conclusions are, therefore, as follows:

"(1) The nutritive value of rice is influenced by the conditions of water-supply under which the crop is grown.

"(2) Rice grown on puddled fields in which a layer of water is always allowed to remain has a nutritive value approximately one-third less than the same rice when grown under dry rainfed conditions.

"(3) The lower nutritive value of rice grown under wet conditions is due, in part at least, to its lower content of vitamines of the water-soluble-B class.

"(4) It seems probable that the conditions of cultivation of rice, especially in regard to water-supply during the growth of the crop, is a factor of importance in determining the endemicity of beriberi."


BERI-BERI COLUMBARUM

Lieut.-Col. R. McCarrison, C.I.E., M.D., D.Sc., F.R.C.P., I.M.S.
Pasteur Institute, Coonoor, S. India

CONCLUSIONS

(1) A condition—beri-beri columbarum—having all the pathological characters of human beri-beri has been produced under experimental conditions in pigeons by means of diets of similar composition to those in use by human sufferers from the disease. This condition differs from polyneuritis columbarum in certain regards of which hypertrophy of the heart is the chief.
(2) The basal factor in the production of beri-beri columbarum is insufficiency, but not complete want, of vitamin B (or of the anti-neuritic fraction of this vitamin).

(3) There is an optimum degree of insufficiency of vitamin B at which beri-beri columbarum is most likely to arise; this optimum is provided by diets of which the vitamin B-value is from 20 to 50 per cent below the minimum required for the maintenance of normal metabolism.

(4) The ultimate cause of the disease is not the negative factor of vitamin-insufficiency but a positive and toxic agent produced in the course of a disordered metabolism arising out of insufficiency of vitamin B in the food. The clinical and pathological manifestations of beri-beri are due in whole or in part to this specific agent.

(5) The existence of this agent has been demonstrated on pathological grounds, and by statistical examination of the experimental data.

(6) Beri-beri columbarum and beri-beri hominum are preventable by the same means.

(7) Since beri-beri columbarum can be produced by diets of similar composition to those in use by the subjects of beri-beri hominum, since the pathological features of the two states are to all appearances the same, and since both are preventable by the same means, it is inferred that the etiology of the two conditions is the same.

(8) Experiments on animals suggest that beri-beri like maladies may be of different kinds; some due to infectious causes; some due to dietetic causes; and some due to a combination of both. The variety of beri-beri dealt with in this Memoir is due to dietetic causes; it is believed to be the variety which is endemic in certain parts of the Madras Presidency.

(9) The results of this investigation confirm the generally accepted view that endemic or true tropical beri-beri is due to insufficiency of vitamin B (or the anti-neuritic fraction of this vitamin) and not to toxic substances produced in rice by bacterial action. They do not preclude the possibility that other maladies included under the generic term 'beri-beri' may have a different etiology.

Indian Medical Research Memoirs March, 1928.
LEUCOCYTE COUNT IN INTESTINAL AMOEBIASIS
Manson-Bahr and Willoughby

CONCLUSIONS

In acute cases of intestinal amoebiasis—those with active bowel symptoms and blood and mucus stools containing active vegetative forms of *E. histolytica*—there is a hyperleucocytosis of 11,000. Figures of value in the differential count are a relative reduction of polymorphonuclears to 64 per cent., no disturbance of lymphocytes and large mononuclear cells, but a slight rise in the eosinophile count to 2 per cent. These figures agree remarkably with the conclusions of v. Schilling-Torgau.

In chronic cases of intestinal amoebiasis—those with quiescent bowel symptoms and diarrhoeic stools containing cysts of *E. histolytica*—there is no rise in the total number of leucocytes, though the differential leucocyte count shows a relative decrease in polymorphonuclear cells to 57 per cent., a slight increase of lymphocytes to 34 per cent., and a definite rise in the eosinophiles to 3 per cent., the last figure being computed in the absence of any co-existing helminthic infection.


REMARKS ON THE TREATMENT OF GANGRENE

W. Sampson Handley, M.S., F.R.C.S.

Leriche, holds that sympathectomy may render durable service in senile arteritis if used with discretion. He thinks it indicated in the severe premonitory pains of gangrene except when there are attacks of "paradoxical" vasodilatation with heat of the foot. The operative outlook is, however, poorer in presence of habitual cyanosis, diffuse oedema, or neuritic pains than when the attacks are of vaso-constrictor type. Tissue infections contraindicate the operation. For incipient gangrene it is indicated if examination shows that the arteries are still dilatable. If they appear obliterated the operation is only justifiable to prepare the way for a low amputation close to the gangrenous area. Sympathectomy, he thinks, is useless for intermittent claudication upon present evidence. If, upon exposure, the artery is found friable and "malacique" he recommends my method of alcohol injection. If it is transformed
into a hard impermeable cord the artery should be resected to interrupt the sympathetic fibres. For the gangrene of young subjects he places more hope for the future in internal secretion therapeutics than in surgical measures, which can only have a temporary effect.

Leriche suggests that in order to minimize the risk of gangrene in cases where the main artery of a limb has to be ligatured, as for aneurysm, the artery instead of being simply tied should be divided between two ligatures. He states that whereas simple ligation is followed by dangerous vaso-constriction lasting some hours, resection of the artery produces immediate and lasting vaso-dilatation. No doubt the same effect could be obtained by a combination of alcohol injection with simple ligature.

I must now call your attention to the method of alcohol injection, which I believe to be a definite advance upon Leriche's operation. I claim for it that it is able in certain cases to avert threatened gangrene or to arrest the spread of senile gangrene already present and to avert the necessity of amputation. In other cases it permits a low amputation to be used instead of a high one.

The technique of periarterial injection is not difficult, though it requires care and delicacy. The femoral artery in Hunter's canal is exposed as for ligature for a length of one or two inches. With the finest obtainable hypodermic needle 2 to 3 minims of alcohol are injected at four points spaced out round the calibre of the artery. The needle is introduced obliquely and nearly parallel with the length of the artery. The artery may be partially rotated to make the posterior injections. On one occasion I punctured the artery and injected alcohol into its lumen. This was shown by bleeding on withdrawal of the needle. The puncture sealed under sponge pressure and no ill effect followed. When the injection is complete a whitish band, perhaps half an inch wide, should be seen round the artery, but no constriction takes place. The wound is closed.

**Effects of Alcohol Injection**

In successful cases the vaso-dilatation produced by alcohol injection is immediate. There is no initial period of vaso-constriction with slackness or absence of the distal pulse lasting
Current Medical Literature

for some hours, such as follows sympathectomy. The cold foot may become obviously warmer than the sound one even before the patient is out of the operating theatre. This fact alone, especially in cases of threatened gangrene, gives the method a decisive advantage over sympathectomy. But this is not the only advantage. Whereas the effect of sympathectomy, according to Leriche, passes off within about five weeks the vasodilatation following alcohol injection may last for a year or more. These clinical differences may be connected with the absence in alcohol injection of the local contraction of the artery seen in sympathectomy.

CRITICISMS

The method of alcohol injection is open to many criticisms. It is admittedly uncertain in its results. Sometimes no alteration in the circulation or surface temperature of the limb can be detected. It appears probable that there are anatomical differences in the distribution of the vasomotor nerves, and that while they sometimes join the artery high up so that they are amenable to alcohol injection of the femoral, in other cases they join it below the level of the injection. In senile cases organic changes of the artery may have made such progress that the muscular mechanism of the vessels may be entirely functionless or the main arteries may be thrombosed. It is to be specially noted, however, that some cases with advanced organic changes in the vessels, and no pulse to be felt in the limb, may nevertheless be strikingly benefited. Moreover, in thrombosis of the main artery the operation may assist in opening up the collateral circulation. But it must be admitted that it is at present impossible to make a proper selection of cases.

What are the indications for alcohol injection? They are not yet defined, and a process which appears to be so safe lends itself to the method of trial. My experience would lead me to recommend it strongly in cases of threatened or incipient senile gangrene of a lower limb. It should, if possible, be applied in the prodromal stage, where severe pain and pallor and coldness of the foot are the principal symptoms, and before actual gangrene has occurred. Extensive gangrene reaching to the leg is a contraindication unless alcohol injection is followed by an immediate low amputation, since, as I have shown, the
increased blood supply may lead to fatal toxic absorption. If the foot above the dead area is congested, and warmer than the sound foot, the operation is contraindicated. In such cases there is probably a septic infection of the tissues, associated with already existing vaso-dilatation.

Alcohol injection appears to be useless in Buerger's disease, and of doubtful value in Raynaud's disease. I have not yet tried it for chronic or perforating ulcer of the foot or for painful or ulcerated stumps.

In conclusion I would say that the surgery of the sympathetic is yet in its infancy, and that it requires for its development a further study of the sympathetic system by anatomists and physiologists and of arterial disease by the pathologists. Many obscurities still remain. Leriche's operation has been justified by a number of brilliant successes in other conditions. Leriche himself does not recommend it for incipient or actual gangrene. Though some surgeons continue to use it for actual or threatened gangrene, I believe that it will be replaced by the method of alcohol injection, which secures the same result in a simpler and safer way without risk to the integrity of the artery, without initial vaso-constriction, and with more permanent vaso-dilatation. For these reasons I think alcohol injection is not a mere technical variation of Leriche's method, but a distinct advance upon it, and that, particularly in senile gangrene, it is the vasomotor operation of choice.

While vasomotor methods can be applied successfully in the early stage gangrene to limit its spread and to restore the vitality of dying tissue, they find their main field of application in an earlier stage before gangrene has actually begun. A serious additional responsibility is thus placed upon the medical man to whom complaint is first made of symptoms of arterial dystrophy likely to end in gangrene. Upon him it devolves to allow vasomotor surgery a fair field for its attempts to avert the loss of a limb.

_B. M. J., October 6, 1928._
THE GENESIS OF EPIDEMICS & The Natural History of Disease.
An introduction to the science of epidemiology based upon the study of
epidemics of Malaria, Influenza, & Plague. By Clifford Allchin Gill,
Lieutenant-Colonel, I.M.S., Director of Public Health, Punjab, &c.
Bailliere, Tindall and Cox, London. Pp xxvi + 538, with Charts,
Maps &c. Price 21s. net.

In this deeply interesting work the author seeks to show that all
epidemics are governed by the same mechanism of epidemicity. The dis­
similarity of the features of epidemics of different diseases, and even
of different epidemics of the same disease, has led most epidemiologists
to the belief that epidemics are the result of some qualitative change in
the specific parasite. Lieutenant-Colonel Gill, by prolonged, careful
observation and analysis of the features of malarial infestation in the
Punjab, both endemic and epidemic, has evolved a theory of the genesis
of epidemics which he names the ‘Quantum Theory.’ As the name shows
this unitary theory holds that the predominant characteristic of the
causation of epidemics is a loss of equilibrium between the amount of
infection and the amount of communal immunity.

The theory, as such, is not new, and has been several times discarded
because it seemingly failed to explain satisfactorily the phenomena of
epidemics of the same disease, and even more those of epidemics of differing
diseases.

The evolution of this theory was with this author associated with the
epidemiology of malaria, and to prove its universality, he proceeded to
seek explanation of epidemics of other diseases along the same lines.
Courageously he attacks what is probably the most difficult epidemiological
problem of our times, the 1918-1919 pandemic of Influenza. In this
investigation, while holding to his unitary theory, he allows a change in
quality as well as quantity in the infection. This seemingly the author
would hold as being of the nature of a specific feature of Epidemic
Influenza, and not affecting his basal argument of generic causation.

A further section dealing with Epidemic Plague is followed by a
series of chapters on the General Properties of Epidemics.

A deeply interesting subsection under ‘Epidemic Malaria’ describes
the methods and results of efforts by the author and his coadjutors to
forecast local epidemics of malaria, basing their predictions upon the
working of the ‘Quantum Theory.’ The remarkable success of these efforts
is undoubtedly a strong point in proving the applicability of the theory
to Epidemic Malaria.

The book is well planned and well written, and if at times its diction
is somewhat pedantic, this is well compensated for by the resultant
clearness. A feature which many authors might copy with benefit to
their readers is the inclusion of a careful summary following each section,
and often each subsection.
To all interested in Epidemiology, and especially to all M.O.H. in the Far East, the book will prove most provocative and valuable.

J.L.H.F.

KALA-azar. A handbook for Students and Practitioners, by L. Everard Napier, M.R.C.S., L.R.C.P. (Lond.)

In charge Kala-azar Research, Calcutta School of Tropical Medicine, Oxford University Press, London, Bombay, Madras, Calcutta 5% x 9, pp 203, 18 plates 8s 6d. ($4.40 Mex. approx.)

In 1918 Dr. Muir published a small handbook on Kala-Azar which set out very clearly the treatment of this disease with antimony tartrate. This book gave much help to practitioners both in India and China. Some years later Drs. Muir and Napier together published a much enlarged edition. Dr. Napier has now thoroughly revised the second book, and not only brought it up to date but added to it considerable valuable material as a result of his experience in the treatment of hundreds of patients during the past few years. He has also discussed in detail the transmission problem. Recent work in India strongly suggests that the sandfly is the transmitting agent, but as actual transmission has not yet been effected the problem must be considered as still unsolved.

The details of treatment by the antimony tartrates are given, as in many centres there are patients who cannot afford to pay for treatment by one of the pentavalent compounds. With regard to these new compounds of antimony Dr. Napier in his preface writes as follows:

"With the introduction of the pentavalent compounds of antimony the whole problem of treatment has undergone a great change. Three years ago a cure rate of about 80% was the best that could be anticipated in a mixed population; now a 95% cure rate is well within reasonable expectation. The minimum course of treatment, which previously extended over a period of two months, now occupies one quarter of that period, and a lower relapse rate can be anticipated after eight injections of at least one of the pentavalent compounds than was the rule after thirty injections of sodium antimony tartrate. Certain patients who 'resisted' treatment by the antimony tartrates can now be cured with comparative ease by the substitution of a pentavalent compound. But here again finality has not yet been reached, and there are still a few patients who are not cured by any of the antimony compounds at present in use."

The relative value of the various pentavalent compounds so far produced is discussed and complications associated with treatment are considered.

The experience of those treating Kala-azar patients in India and China is not the same in every particular. In China it has been found advisable to give relatively smaller doses, about two thirds of the dose recommended by Dr. Napier. He states also that vomiting after the use of Neostam occurs frequently whereas the reviewer has found it a rare complication in his use of this drug in China.
The following statement on p 124 is to be commended:—"The importance of making an absolutely definite diagnosis before the treatment is commenced cannot be overemphasised. One should aim at making a diagnosis which is not only absolutely convincing at the time, but which one will not doubt even after the patient has had 60 injections of sodium antimony tartrate without showing much sign of improvement." Yet for routine diagnosis in the out-patient department where as many as 30 cases of suspected Kala-azar may have to be dealt with in a morning the author relies on the aldehyde (formalin) test if it is definitely positive. In China, however, especially in areas where Schistosomiasis is found, nothing short of the demonstration of Leishman-Donovan bodies either by Liver or Spleen puncture should be accepted as an absolute diagnosis. In doubtful cases as many as 4 or 5 spleen punctures may be necessary before parasites are found. Besides giving a full description of the diagnostic methods at present in use Napier gives his experience with a new antimony precipitation test in which the pentavalent compounds are used as the reagent with the patient's serum.

Altogether this is a well balanced and eminently satisfactory book. It deals fully with epidemiology, etiology, pathology, symptomatology, diagnosis, laboratory methods and treatment, and is a book that should be in the hands of all those who treat Kala-azar patients.

E.B.S.

A TREATISE ON KALA-AZAR
Upendranath Brahmacari, K.I.H. (Gold) Rai Bahadur, M.A., M.D., Ph.D.
London: John Bale, Sons and Danielsson, Ltd. 1928. 12 plates (7 colored) and 39 figures, pp. 252 Price 21 shillings.

Both the author and publisher are to be congratulated on the production of this book on Kala-azar. The present volume, which is much superior to the second edition of the author's book on Kala-azar, published in 1925, is a translation from the author's Treatise on Kala-azar, in Professor Dr. Carl Mense's Handbuch der Tropenkrankheiten, revised and enlarged.

The author is well known as the discoverer of Urea stibamine, one of the most successful of the organic preparations of antimony used in the treatment of Kala-azar. He devotes considerable space to the results of treatment with this drug. Details of oral administration are given, but this method has been found of no value in treatment. Also, why give the technique of the intravenous injection of metallic antimony or recommend its use when the organic preparations have already been proved to be so much superior? One would have expected to find some comment upon the results of treatment by an organic preparation, Von Heyden "696" which Dr. Napier considers the best compound so far produced. There is, however, only one sentence, "Von Heyden "696" has been used by Napier in the treatment of Kala-azar."
There are four good maps illustrating endemic areas throughout the world. On the map of China there are several places, such as Changsha, Soochow, Shaowu, Wenchow, Swatow, Shuichow, Paking, Yaung-long, Pakhoi which are marked as endemic centres. The source of this information is not stated, but we believe that it has still to be proved that there are any endemic areas of Kala-azar south of the Yangtze river.

The morphology of the parasite, its probable modes of transmission, animal experiments etc. are discussed. The work done in India showing the probable role of the sand-fly in transmission is given in detail.

A new form of cutaneous Leishmaniasis, first noted by the author, is here well described and illustrated by three plates, two of which are colored. Dr. Bramachari states that the eruptions generally appear about a year after the completion of the antimonial treatment of the original disease. They occur as whitish patches on the face, trunk and extremities, associated with papules and nodules especially marked on the face and sometimes on the scrotum. Leishman-Donovan bodies may be found in smears from the patches. A large number of these cases have been diagnosed in India. So far they have not been reported as occurring in Chinese patients.

The book has a bibliography comprising 57 pages. This appears to include every communication of importance that has been written on the subject.

The book is well written and beautifully illustrated and will be of interest and value to all who have Kala-azar patients in their clinic.

E.B.S.

Correspondence

Infectious Jaundice

Tenghsien, Sung.
November 14, 1928.

Editor, China Medical Journal,
Shanghai.

Sir,

The readers of the Journal will no doubt be interested in a brief mention of jaundice that is fatal in pregnant women which is at present epidemic at Tenghsien, Shantung.

So far as I am informed only pregnant women have been attacked.

We hear there have been many deaths.

I personally know of four deaths. I was called to one of these when the patient was comatose after a hemorrhage from her stomach, though the still-born infant had been delivered. Four of our Christian women were attacked.

Three of these we treated and the fourth was healed through prayer and China berry tea!! Our three cases lived, but two lost their infants. These were seven
months pregnant. One of these had a hemorrhage six hours after delivery that almost proved fatal.

The third was three months pregnant. She had an uneventful attack of four weeks, but did not miscarry.

The only book I had to consult was old. This advised giving quinine and treating symptoms with special attention to kidneys.

We started treatment with C. C. pills, gave 5 grs of quinine daily, and Nitrous ether, with special diet.

There was a similar epidemic at Weihsien Sung, several years ago.

The missionary ladies who were pregnant were isolated—no Chinese, not even a servant, allowed to enter the yard. Thus they escaped infection.

If a doctor from Weihsien or elsewhere can add some experience to this it will be most welcome.

Yours truly
B. C. Patterson, M.D. (Mrs.)

In a further letter Dr. Patterson says:

I find the men are affected; not as many as women, but still not a few and some men have died with this jaundice, so report says, but not many. I have had no men reported to me.

Report also says in one village over 10 pregnant women died.

The one reporting this said that in the country it had been so fatal that for us to have saved one case was worth giving us a good reputation.

I have no open clinic—am just called for friends and Christians—so I am not in touch with the public.

***This letter is dealt with in the Editorial Columns.—Editor.

WANTED COLUMN

Wanted a doctor (British race) to assist for six or twelve months in a port practice in one of the coast cities.

Apply:

The Editor,
China Medical Journal,
P. O. Box 1121,
Shanghai.

Graduate Men Nurses

The School of Nursing of the Union Hospital, Hankow, is able to supply a limited number of fully trained N.A.C. Graduate Nurses to other hospitals in China.

Applications should be sent to, and full particulars may be obtained from
Miss G. E. Stephenson, S.R.N.
School of Nursing,
Union Hospital, Hankow.
News and Comments

The January Issue

The Editor is more than usually proud over the prospects for the January number of the China Medical Journal, and has to thank many contributors for his happy state of mind.

Electrical Currents

What is the largest current of low frequency that can pass through the body without fatal results? You will find something towards the solution of this in January, and illustrated by a very remarkable coloured sketch of the effect of a truly enormous current.

Bulimia

Have you ever heard of a case of this remarkable disease? If not you will get some rare details in Clinical Notes in January.

Tumours

What is the queerest tumour you have ever seen? If you can beat the pictures that appear in January it will give the Editor great pleasure to publish your pictures.

A Crooked Leg

Did you ever see a femur bent at right angles without evident fracture? Then here is your opportunity for seeing it.

How to Feed Infants

Surely nothing new can be said on this time-worn subject? Possibly so, but if you want to know, not how you feed infants, but how infants feed themselves, then the Current Medical Literature in January will give you the story of one of the most fascinating experiments ever made.

These and other good things are to be found in the January issue of which we repeat we feel justly proud.

Supplies for British Hospitals

The Members of the Hospital Aid Department of the British Women's Association in Shanghai are busily working for Mission Hospitals under British management in China. They will pleased to consider applications for parcels of hospital requirements from any British Hospital with a foreigner in charge. These will be given free providing the said hospitals can find a way of transport for such parcels.

Please apply to
Mrs. Weston,
Secretary, Hospital Aid Dept.
British Women's Association
12 The Bund,
Shanghai.

Outbreak of Smallpox

News comes of a very serious outbreak of smallpox at the county town of Kiayu, not very far from Wuchang and easily reached by the railway. It is reported that over 200 children have already died and that the epidemic is spreading. Its transmission to Wuchang would be easy, and there is no medical service which could prevent persons already suffering from the disease from making use of the trains.

Non Angli Sed Angeli

The ideals towards which Dr. Menzies aspires are declared by him in the following words, which may fitly close this notice: "Fourteen hundred years ago the children of the southeastern part of England were famed throughout the civilized world for their beauty, their health, and their physique. The industrialization and urbanization of the nineteenth century, combined with the pursuance of the policy of laissez-faire, sadly obscured the beauty of the race's childhood. We are now in the process of emerging from that nightmare. Good housing, better education, playing fields—these three are the dominant needs of the child and parent of England's great metropolis. Already and increasingly, going into our schools, the improving appearance of our London children brings back the echo of the words of Pope Gregory, Non Angli sed Angeli."

B. M. J. September 8, 1928.

Diagnosis

Sir Thomas Horder in his "medical notes" states "In every case in which a carefully designed programme of treatment fails of results in a disease which experience shows to be amenable to certain therapeutic measures and within a reasonable time, the diagnosis should be entirely revised. The only way to do this in such circumstances is for the observer to clean the slate of his mind completely and to approach the case anew in this attitude."


NEW MEMBER PROPOSED

Liu, J. L. M. D., Tsinan C.I.M. Yunching Shansi

Proposers: Dr. A. G. Taylor
Dr. L. P. Rand

NEW MEMBERS ELECTED

Dr. N. B. Block M.B.F.B. Seoul, Korea
Dr. F. S. Dymond U.M.C. Chaotung, Yunnan
Dr. C. S. Kim C.H.E. Shanghai