

CHINA.

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IMPERIAL MARITIME CUSTOMS.

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II.—SPECIAL SERIES: No. 2.

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MEDICAL REPORTS,

FOR THE HALF-YEAR ENDED 30TH SEPTEMBER 1880.

20th Issue.

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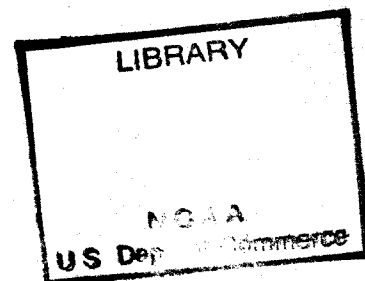
PUBLISHED BY ORDER OF  
**The Inspector General of Customs.**

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SHANGHAI:  
STATISTICAL DEPARTMENT  
OF THE  
INSPECTORATE GENERAL.

MDCCCLXXXI.

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CHINA.

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STATISTICAL DEPARTMENT  
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MDCCLXXXI.

INSPECTOR GENERAL'S Circular No. 19 of 1870.

INSPECTORATE GENERAL OF CUSTOMS,

PEKING, 31st December 1870.

SIR,

1.—It has been suggested to me that it would be well to take advantage of the circumstances in which the Customs Establishment is placed, to procure information with regard to disease amongst foreigners and natives in China; and I have, in consequence, come to the resolution of publishing half-yearly in collected form all that may be obtainable. If carried out to the extent hoped for, the scheme may prove highly useful to the medical profession both in China and at home, and to the public generally. I therefore look with confidence to the co-operation of the Customs Medical Officer at your port, and rely on his assisting me in this matter by framing a half-yearly report containing the result of his observations at.....upon the local peculiarities of disease, and upon diseases rarely or never encountered out of China. The facts brought forward and the opinions expressed will be arranged and published either with or without the name of the physician responsible for them, just as he may desire.

2.—The suggestions of the Customs Medical Officers at the various ports as to the points which it would be well to have especially elucidated, will be of great value in the framing of a form which will save trouble to those members of the Medical profession, whether connected with the Customs or not, who will join in carrying out the plan proposed. Meanwhile I would particularly invite attention to—

*a.*—The general health of.....during the period reported on; the death rate amongst foreigners; and, as far as possible, a classification of the causes of death.

*b.*—Diseases prevalent at.....

*c.*—General type of disease; peculiarities and complications encountered; special treatment demanded.

*d.*—Relation of disease to  $\left\{ \begin{array}{l} \text{Season.} \\ \text{Alteration in local conditions—such as drainage, \&c.} \\ \text{Alteration in climatic conditions.} \end{array} \right.$

*e.*—Peculiar diseases; especially leprosy.

*f.*—Epidemics  $\left\{ \begin{array}{l} \text{Absence or presence.} \\ \text{Causes.} \\ \text{Course and treatment.} \\ \text{Fatality.} \end{array} \right.$

Other points, of a general or special kind, will naturally suggest themselves to medical men; what I have above called attention to will serve to fix the general scope of the undertaking. I have committed to Dr. ALEX. JAMIESON, of Shanghai, the charge of arranging the Reports for publication, so that they may be made available in a convenient form.

3.—Considering the number of places at which the Customs Inspectorate has established offices, the thousands of miles north and south and east and west over which these offices are scattered, the varieties of climate, and the peculiar conditions to which, under such different circumstances, life and health are subjected, I believe the Inspectorate, aided by its Medical Officers, can do good service in the general interest in the direction indicated; and, as already stated, I rely with confidence on the support and assistance of the Medical Officer at each port in the furtherance and perfecting of this scheme. You will hand a copy of this Circular to Dr. ...., and request him, in my name, to hand to you in future, for transmission to myself, half-yearly Reports of the kind required, for the half-years ending 31st March and 30th September—that is, for the Winter and Summer seasons.

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I am, &amp;c.,

(signed)

ROBERT HART,

I. G.

THE COMMISSIONERS OF CUSTOMS,—*Newchwang, Ningpo,*  
*Tientsin, Foochow,*  
*Chefoo, Tamsui,*  
*Hankow, Takow,*  
*Kiukiang, Amoy,*  
*Chinkiang, Swatow, and*  
*Shanghai, Canton.*

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SHANGHAI, 10th March 1881.

SIR,

IN accordance with the directions of your Despatch No. 6 A (Returns Series) of the 24th June 1871, I now forward to the Statistical Department of the Inspectorate General of Customs, the following documents:—

- A.—Report on the Health of Amoy for the half-year ended 30th September 1880, p. 1.
- B.—Notes on an Epidemic of Continued Fever, by Dr. MANSON, pp. 2-9.
- C.—Note on Distoma Ringeri, by Dr. MANSON, pp. 10-12.
- D.—Additional Notes on Filaria Sanguinis Hominis and Filaria Disease, by Dr. MANSON, pp. 13-15.
- E.—Report on the Health of Tamsui and Kelung for the year ended 30th September 1880, pp. 16, 17.
- F.—Report on the Health of Ichang, pp. 18-21.
- G.—Report on the Health of Wuhu for the half-year ended 30th September 1880, pp. 22, 23.
- H.—Report on the Health of Swatow for the half-year ended 30th September 1880, pp. 24-26.
- I.—Report on the Health of Ningpo for the eighteen months ended 30th September 1880, pp. 27-31.
- K.—Report on the Health of Shanghai for the half-year ended 30th September 1880, pp. 32-39.

I have the honour to be, .

SIR,

Your obedient Servant,

R. ALEX. JAMIESON.

THE INSPECTOR GENERAL OF CUSTOMS,  
PEKING.

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The Contributors to this Volume are—

P. MANSON, M.D., CH.M. ....	Amoy.
B. S. RINGER, M.R.C.S., L.S.A. ....	Tamsui and Kelung.
E. P. MCFARLANE, L.F.P. & S.G. ....	Ichang.
A. S. DEANE, L.K. & Q.C.P. ....	Wuhu.
E. I. SCOTT, L.K. & Q.C.P., L.R.C.S.I. ....	Swatow.
W. A. HENDERSON, L.F.P. & S.G. ....	Ningpo.
R. A. JAMIESON, M.A., M.D., M.R.C.S. ....	Shanghai.

For the footnote on page 12, the Compiler is responsible.

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A.—Dr. P. MANSON'S Report on the Health of Amoy for the Half-year  
ended 30th September 1880.

FROM the 23rd November 1879 till the 20th July 1880 there was no death in the foreign community; from the latter date till the end of September there have been seven deaths. With the exception of an epidemic of fever, the general health, as far as climatic disease of local origin is concerned, has been fairly good.

The following were the causes of the deaths I allude to:—

1. An infant . . . . . Inanition; prematurely born.
2. Shipmaster . . . . . Multiple abscesses of the liver.
3. Eurasian . . . . . Brain disease; hemiplegia.
4. Resident . . . . . Acute dysentery.
5. „ . . . . Intermittent fever; enlarged liver; syncope.
6. „ . . . . Drowning.
7. Sailor . . . . . Concussion of the brain; wound of lungs from fractured ribs; accident.

The case of liver abscess ran a very rapid course. The postmortem examination discovered 14 abscesses, varying in size from two to eight ounces, occupying nearly the entire liver. The abscesses appear to have been secondary to superficial but extensive ulceration of the ascending colon. During life the diagnosis of multiple abscess was made by the aid of the aspirator, and symptoms of ulceration of the great intestine were carefully inquired after, but beyond a history of irregular diarrhoea some time previous to the development of liver symptoms, I could elicit no positive indication of dysenteric or other ulceration of the bowel.

The fatal case of dysentery ran its course in 10 days. Ipecacuanha was given in large and frequently repeated doses, and for the most part was retained; twice the acute symptoms appeared to be arrested by it, but gangrene of the intestine set in and proved rapidly fatal. The drug was given within 24 hours of the first appearance of dysenteric symptoms, and in full doses. I am glad to say I have but seldom seen it fail so decidedly.

*B.—Epidemic of Continued Fever.*

By PATRICK MANSON, M.D.

I HAD an opportunity this summer of observing an epidemic of continued fever of a somewhat anomalous character. As it illustrates admirably the difficulty we meet with in classifying the fevers of tropical countries, I am induced to give the following brief sketch of the cases that came under my notice.

The epidemic was of a very circumscribed character, as far as I could ascertain, among the Chinese; but out of the small number of foreigners residing on Kulangsu, six were attacked. Undoubtedly many more Chinese had the disease than those whose cases passed under my own observation—six in number,—but with them the malady seemed to be limited to a particular group of houses; there was nothing like a general epidemic.

The group of houses I refer to, and from which all the Chinese cases came, is situated at the foot of a hill, and on the margin of a string of paddy fields. There are many wells along the margin of the paddy land, and as they lie low, without any particular appliance to keep out surface water, these wells must be filled with garbage after every shower of rain. They supply water to several washermen, and probably eke out the yield of milk from the many buffaloes stabled near them, and from which part of the milk supply of foreigners comes. Preceding the outbreak of the epidemic among foreigners we had some very rainy weather, and it is a curious circumstance that all the foreigners affected obtained their milk from milkmen living in the vicinity of these wells. The greater part of the foreign community is supplied from another dairy, situated some distance from any Chinese house, and about a mile away from the focus of the epidemic. I mention this fact about the milk supply as significant, but do not necessarily associate it with the sickness among foreigners as cause and effect. The following is a brief sketch of the cases that came under observation. I number them (arbitrarily) for the sake of reference.

1. On 23rd May a Chinese lad, about 18 years of age, was admitted to the Chinese Hospital with symptoms resembling typhoid fever. He had high fever, furred tongue, low delirium, a stupid, drunken countenance, diarrhœa, and abdominal tenderness. He took large doses of quinine for a time, but, not improving, all drugs were put aside, and careful and diligent feeding substituted. He was well enough to leave hospital on 28th June, but he had been very ill, was wasted to a shadow, and had lost the vision of one eye from sloughing of the cornea setting in towards the end of his fever. On inquiry I learned that his illness began about the 28th of April with shivering, followed by fever, and that he was not brought to hospital till he had become delirious. I put the case down at the time as typhoid fever.

2. This lad's father was in hospital from 23rd April to 3rd May with a milder attack of apparently the same disease. He was ill about a month before he applied for admission.

3. His mother was laid up from 4th April to 3rd May with what was described as quotidian ague. I did not see her.



4. A girl about 17 years of age, a pupil in one of the mission schools, came to live during the summer holidays in a house near that from which the three preceding cases came. She left school about the end of July. On 15th August she got up in the morning feeling giddy; at 8 A.M. she had a smart rigor, rapidly followed by high fever and delirium. She continued in this state till the morning of the 18th, when her friends brought her to the hospital. She was moribund on admission, and died within an hour.

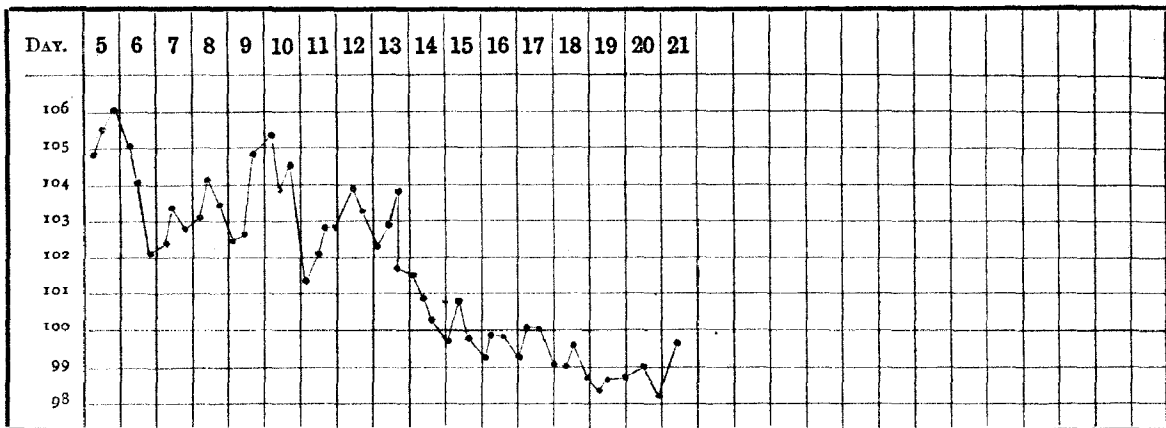
5. Her little brother, who slept in the same bed with her, began to be ill on 16th August. He came with his sister to hospital on the 18th. I saw him shortly after admission; he had smart fever, and could keep nothing on his stomach. He got a subcutaneous injection of quinine at once. This was repeated on the 19th, 20th, and 21st; on the 22nd he was well and left for his home.

6. About the end of May I was called to see a lad, the servant of Mr. A. (7), ill with fever. He lived in Mr. A.'s house till his fever began, but when I first saw him he had been removed to a Chinese house close by. He had been ill for about a week, his only symptoms being fever and frequent profuse epistaxis. He had no diarrhoea. Supposing the case to be one of remittent fever, I ordered several large doses of quinine. Next day he appeared better, and I handed the case over to a native assistant. Hearing nothing about him for some time, I concluded he had recovered; but towards the end of June I was informed by the assistant that he was no better and that his temperature was permanently over  $105^{\circ}$ , and often as high as  $106^{\circ}$ . I had him removed to the Seamen's Hospital, and made a careful examination. He was very much wasted, had a dry, harsh skin, a slightly furred tongue, and the high temperature above mentioned; but he had no delirium, diarrhoea, abdominal tenderness, petechiæ, nor any visceral disease I could make out. He took quinine in very large and frequently repeated doses. The temperature fell rapidly, but it took weeks to reach the normal standard, any remission in the use of quinine being immediately followed by an increase of fever. Altogether he was ill about two months, and apparently owed his recovery to the constant drugging with quinine. He is now quite well.

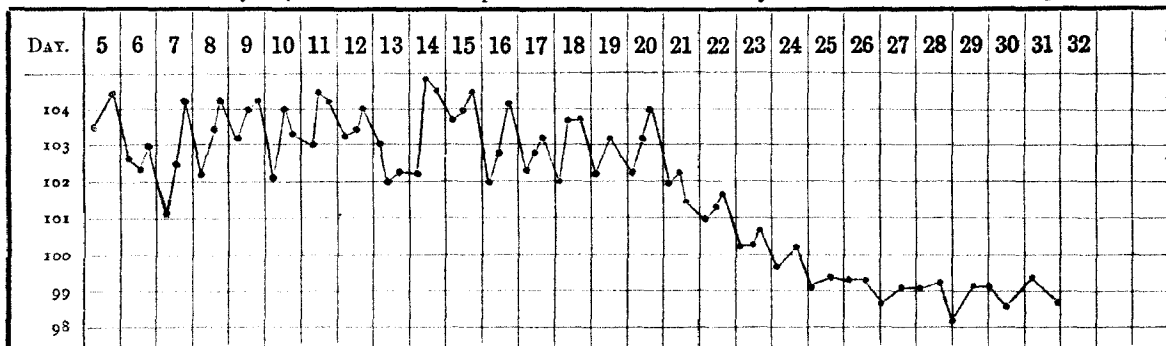
These are all the Chinese cases of which I had personal cognizance. At the time there was no general epidemic of fever among the natives. The usual autumnal epidemic of malarial fevers, which is at present very severe, did not begin till the middle or end of September.

7. Mr. A.'s was one of the first cases of fever amongst foreigners. He was taken ill about the 10th June, with attacks of feverishness coming on every afternoon, preceded by slight feelings of chilliness, and followed during the evening and night by considerable sweating. He was always pretty well during the morning, and was able to move about till 2 P.M. Although cinchonised frequently, his fever continued for a fortnight, and did not leave him till he was sent on a voyage to Tamsui. He improved as soon as he got to sea, but on his return to Amoy had a slight relapse. He had no diarrhoea.

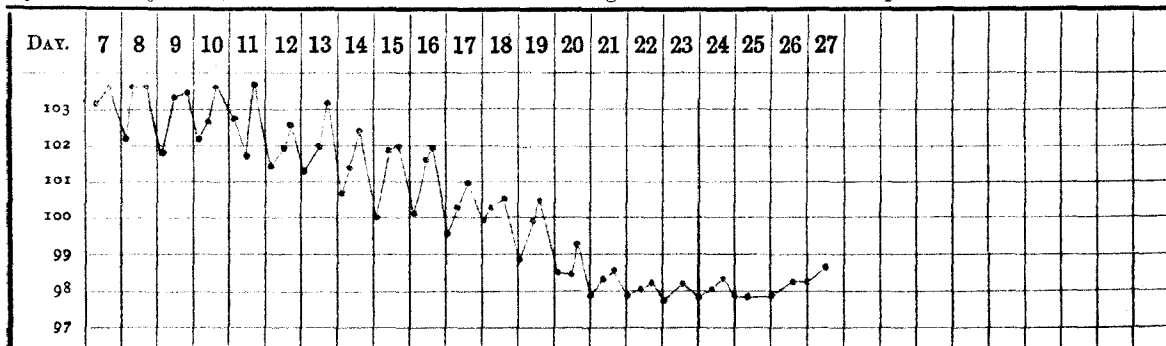
8. Mrs. A. woke during the night of 26th-27th June feeling cold; she shivered, became very hot; and violent fever was followed by profuse perspiration. On the 27th, at midday, had a similar attack, and again during the night and following day two separate and similar attacks. On the 29th had four such distinct paroxysms of rigor, fever, and diaphoresis, the thermometer rising during the fever to  $105^{\circ}.5$ , and probably higher. At midnight had another flash of fever, and on its subsiding, quinine in five-grain doses was taken every hour for five hours, and cinchonism induced. Fever then became continued. On the 30th June, 1st July, and 2nd July, on each day had forty grains of quinine. Diarrhoea set in. On 1st July she miscarried at five months. Then the diarrhoea became very violent, and collapse threatened. Lead and opium were freely administered and appeared to control the purging. Fever then gradually abated, but not before a bad bed sore had formed over one gluteal region. By the 14th July the temperature had fallen to normal, and from that day she convalesced steadily. The following chart indicates the temperature in this case. Since the fever her hair has fallen out. While this lady, her husband, and their servant were ill, I was attending three other cases of grave continued fever in foreigners.



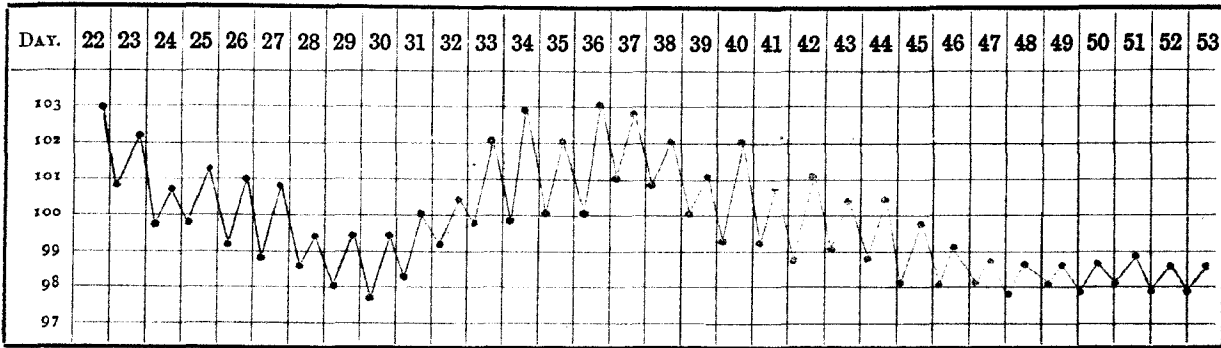
9. Mr. B., about the beginning of June, had a sharp attack of ordinary summer diarrhœa. The violence of the attack abated, but for some time his bowels kept relaxed, and about the 10th June he began to be feverish. By the 15th he was confined to bed, his temperature ranging from  $103^{\circ}$  to  $104^{\circ}.5$ . Fever and diarrhœa persisted for at least three weeks longer, and it was not until the 27th or 28th day of his illness that the temperature fell to normal. There was no marked iliac tenderness nor enlargement of the spleen; but he had delirium of a typhoid character, subsultus, and a few rose-coloured spots. At the outset he was liberally drugged with quinine without benefit; during the latter half the treatment was entirely expectant. His temperature on the several days is shown in the following chart:—



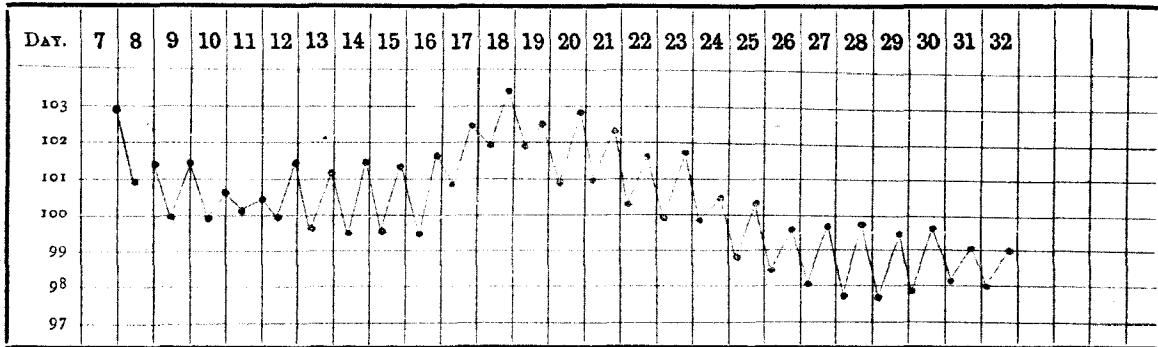
10. On the 18th or 19th of June Miss C. began to complain of languor, headache, pain in the limbs, and fever. She took quinine for several days without benefit. On the 7th day of her illness the thermometer had risen to  $103^{\circ}$ , and diarrhœa was frequent. Fever and diarrhœa continued for a week longer and then gradually subsided; on the 21st or 22nd day she was convalescent. There were no spots, splenic enlargement, nor iliac tenderness. The following chart illustrates the temperature:—



11. About the 4th of June Mrs. D. was attacked with fever and diarrhœa and præcordial oppression. She was living in what I considered a malarious locality. She took quinine in moderate doses all through her illness. About the 28th day the thermometer had fallen to normal, but this temporary improvement was quickly followed by a relapse, and it was not until the end of the seventh week that she could be pronounced convalescent. The rise and fall of temperature was thus recorded:—



12. Her husband, Mr. D., began to suffer from headache, lassitude and fever about the 26th July, a week after his wife began to get well. He had no diarrhœa; headache, lassitude, anorexia and fever were his only symptoms. He was treated with aperients and quinine. Towards the end of the second week he improved slightly, but relapsed, and it was not until the beginning of the fifth week that he began to get well. The following is his temperature chart:—



In the case of the foreigners attacked, the fever has been followed in every instance by falling of the hair (I cannot speak to this point as regards the Chinese); but beyond this and slight debility, it has had no other sequelæ whatever.

One curious circumstance I would note in connexion with this epidemic. Of the six foreigners attacked, four were missionaries. All the foreign residents together number only about 260, including children. Of these, 20 are missionaries, or their children. If all the cases had occurred in one house, the circumstance of its being a missionary's house might be fairly ascribed to accident and some purely local and limited influence; but the cases occurred in three different houses. Two of the houses, it is true, were in close proximity, but the other was quite

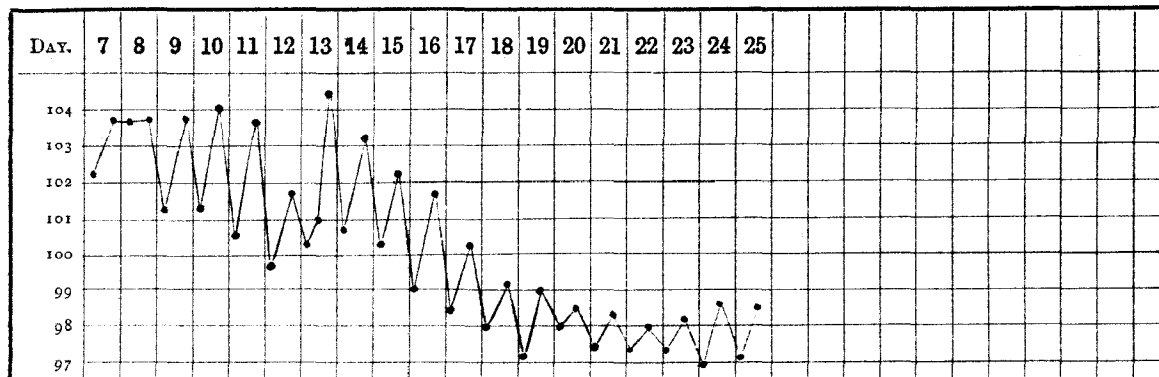
three-quarters of a mile distant, and in a most salubrious situation. It might be suggested that in course of their occupation as missionaries they may have been exposed to the same morbid influences, but I could trace nothing of this sort, and such a hypothesis is upset by the fact that the other two cases—husband and wife—were entirely unconnected with the missionary circle, and lived at some distance from any missionary's house. The only circumstance that I can discover connecting these six cases is the fact I have already stated, that all of them consumed milk from the same dairy, or from dairies situated in the locality I have already indicated as the focus of the epidemic among the Chinese. In my Report for the year ended 30th September 1879,\* I remarked that there had been a circumscribed epidemic of what I believed to be typhoid fever on Kulangsu in the autumn of 1878. Curiously enough, this epidemic affected the same group of houses from which all the Chinese cases of this year came.

The fact that all of these cases occurred in a small community about the same time, and the majority of them in the same locality, amounts to présumptive proof that all of them were examples of the same disease. But that this disease was genuine typhoid is by no means so certain. In some, the symptoms supposed to be characteristic of this disease were present; in others, again, beyond the facts that the fever was continued and was uncontrolled by quinine, there was no evidence of its typhoid nature. One case was decidedly intermitting, but in this instance quinine completely failed, so that it was probably non-malarial; but in another case—that of the little boy whose sister died—quinine appeared to cut the disease short at once.

An ingenious explanation of such anomalous fevers has been invented, and in place of candidly admitting that we really know little or nothing of their real nature, it has been affirmed that they are a combination of ordinary typhoid and intermittent or remittent fever, and the name "typho-malarial" applied to them. I do not think there is satisfactory evidence for the existence of such things as hybrid fevers. The old notion that the poisons of scarlet fever and measles sometimes combine to produce a third species of exanthematous fever has been abandoned. If we believe in the germ theory of the fevers, and that the germs are specifically distinct, it is difficult to conceive of the marriage of the distinct species. I do not think it likely that the specific typhoid germ and the specific malaria germ could combine to produce a hybrid germ. Possibly the typhoid germ might be swallowed by one already infected by malaria, or *vice versâ*; but such an accident must be very rare, and epidemics of such a combined disease would be sure to be accompanied by a preponderating proportion of pure malarial fever and pure typhoid fever. An epidemic of typho-malarial fever could not occur in a community otherwise nearly entirely free from pure malarial fever and pure typhoid fever.

The truth is we are nearly entirely ignorant of a number of specific fevers which from time to time affect the inhabitants of foreign countries. I frequently meet with cases of continued fever both in foreigners and natives which do not admit of diagnosis and classification. For example, the case of fever imported from Tamsui last autumn, the temperature chart in connexion with which was noted as follows:—

\* See Customs Medical Reports, xviii, 58.

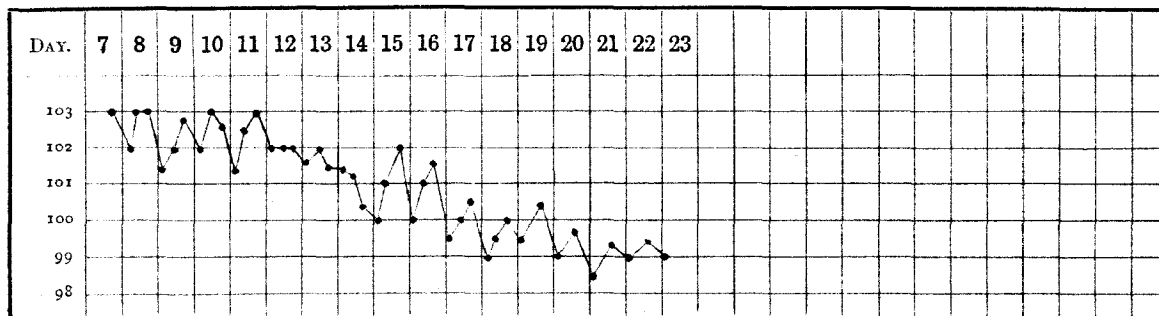


The history was briefly this:—

The patient had frequently had "Tamsui fever." On 23rd November he felt pain in his left side; on the 24th, was feverish; on the 25th, had rigors and was much prostrated, and he took some quinine; fever continued, and on the 28th he left Tamsui; on the 29th he arrived in Amoy. He had then considerable fever, prostration, pains in the neck, arms and legs, and some tenderness of the epigastrium; his tongue was furred; he had severe headache, and he was covered from head to foot with an exanthem. The spots were circular, from  $\frac{1}{16}$ " to  $\frac{1}{8}$ " in diameter, red, not elevated, and disappeared on pressure. He had neither diarrhœa, iliac tenderness, nor enlargement of the spleen. The eruption kept out till 4th December. During that night he perspired profusely, and on 5th December the eruption had entirely faded; this was the day of highest temperature. From that date the fever gradually subsided, and he was convalescent on the 20th day of his illness.

The case in some respects resembled mild typhus, but wanted many of the features of that disease. Again,

A lightkeeper was brought in this summer from Chapel Island—a bare rock, miles from any land or opportunity of infection—ill with a continued fever. I saw him on the seventh day of his illness. He had much headache and was a good deal excited; but, beyond the ordinary phenomena of simple continued fever, had no particular symptoms. His temperature (shown in the following chart) did not reach the normal point till the end of the third week. He took abundance of quinine, but apparently without any curative effect on the fever.



What were these cases? Certainly not typhoid, and certainly not malarial.

Besides the well-known exanthematous fevers whose characteristics have been marked out in Europe, and are easily recognised, the medical practitioner in these parts has to deal with a

miscellaneous collection of fevers whose diagnosis and treatment he has for the most part to mark out for himself. A considerable proportion of these may perhaps be relegated to what is called "malaria," but there is a large residuum, examples of which I have just given, which can neither be classified among the known exanthems nor among the malarial fevers. Very soon after commencing practice in China I learned for practical purposes to separate the non-exanthematous fevers into what I designate quinine fevers and non-quinine fevers, *i.e.* into fevers which quinine cures speedily, and fevers on which quinine has no specific curative influence. Unless there are distinct indications to the contrary, I treat at the outset all cases of non-exanthematous fevers with aperients and quinine pushed to cinchonism, and if the fever is not thereby speedily cut short I conclude I have to deal with a non-malarial fever. The malaria bacillus, or whatever may be the specific cause of malarial fevers, is killed or paralysed by quinine, or quinine in some way interferes with its fever-producing effects. Given a fever which does not subside on the proper administration of the specific for malaria, I think we are justified in most instances in concluding that such fever is non-malarial. And if, in addition to the evidence supplied by this test, we find that such a fever subsides after a week or two spontaneously, and is not succeeded by the recognised consequences of malarial poisoning, such as agues, neuralgias, enlarged spleen, anæmia, and so forth, we have abundant reason for pronouncing it non-malarial. Every year I meet with such cases, and I confess to great confusion in my ideas with regard to them. One gets little satisfaction from books on the subject. Certain classifications are proposed, but when the attempt is made to attach a name to a given case the attempt is seldom satisfactory.

It was therefore with some hope of receiving fresh light on this subject that I read the reports of the Epidemiological Society's discussion on "Fevers in India" and the various papers by distinguished Indian authorities leading up to the debate. But I must confess to a feeling of complete disappointment at the outcome of the papers and the discussion they gave rise to. Dr. NORMAN CHEVERS, in his very interesting "Practical Notes on the ordinary Diseases of India" (*Medical Times and Gazette*, 8th May 1880), says:—

I believe that I have always, since the occurrence of my first case, been well acquainted with the cause and nature of the febricula, simple continued fever, and ardent fever of Bengal . . . . . As I did not see true enteric fever until I had served for many years in India, I treated all fevers, with the exception of the exanthemata, with quinine, the plain result of which is that from that day to this no case of simple continued fever or of ardent fever has ever fully developed itself under my observation.

He is careful to say that this statement applies only to Bengal. It certainly does not apply to South China, as may be gathered from many of the foregoing cases.

Surgeon-Major W. GERARD DON says of febricula, simple continued fever, and enteric or typhoid fever, that they are—

Mutually allied and mixed up in their etiology and epidemiology. . . . . From what I have seen and read I cannot help thinking that the broad factors in all climatorial fevers are, if not identical, entirely similar.

That is, that the cause producing simple continued fever produces typhoid fever. Adopting this etiology and Dr. NORMAN CHEVERS' therapeutics, we ought to cure typhoid fever with quinine!

Dr. JOSEPH EWART believes—

That many of the so-called malarious remittents were simply typhoid or typhus fever modified, often marked for a time by malarious poisoning; but experience of enteric fever in India tends to show that malaria, such as is the accepted cause of paroxysmal fevers, is never the cause *per se* of enteric fever in India.

He does not say in the paper I quote what he considers to be the nature of febricula, ardent fever, or simple continued fever, but leads the reader to infer that a large proportion of such cases are really instances of typhoid fever.

Surgeon-General C. A. GORDON has no fewer than ten species of fever presumably acknowledging ten different causes, besides ordinary typhoid fever, viz., 1, endemic continued fever; 2, continued fever of adynamic type; 3, febricula; 4, ardent fever; 5, endemic remittent; 6, fever of uncertain type; 7, continued fever; 8, typho-malarial fever; 9, remittent; and 10, malarial endemic.

It is very evident from these discrepancies of opinion that the clue to the proper classification of tropical fevers has not been found; and I do not think that it will be found until investigators disabuse their minds of the idea that these fevers must be modifications or combinations of two poisons only, the typhoid and the malarial. The history of the discovery of the difference between typhoid and typhus should ever be a warning when the attempt to assign a fever to its cause is made. We are too apt to assume that we can assign correctly the various causes of diseases, and dislike very much to say, when asked for an answer, "I don't know," or to think that there are forces and poisons in nature of whose existence we are ignorant.

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## C.—Distoma Ringeri.

By PATRICK MANSON, M.D.

The list of parasites inhabiting the human body is gradually becoming a long one; another addition—the latest, I believe—has been recently made by Dr. RINGER, of Tamsui, Formosa. The following notes embrace all that is yet known of the new parasite.

Some time ago, 6th November to 18th December 1878, I had in hospital here a Portuguese suffering from symptoms of thoracic tumour presumed to be an aneurism. He improved with rest and treatment, and returned to Tamsui, whence he had come and where he had resided for many years. He did not live long after his return, and died suddenly (June 1879) from rupture of an aneurism of the ascending aorta into the pericardium. Dr. RINGER made the postmortem examination, and, knowing I took an interest in the case, kindly wrote me the particulars of the examination. Besides describing the immediate cause of death, he told me he had found a parasite of some sort in making a section of the lung, and promised to send the animal to me for inspection. He wrote:—

After making a section I found the parasite lying on the lung tissue—it might have escaped from a bronchus. Whilst alive a number of young (microscopic) escaped from an opening in the body. There were some small deposits of tubercle, no cavities, and, if I remember aright, slight congestion of the lungs.

Last April a Chinaman consulted me about an eczematous eruption he had on his face and legs. The eruption had been out for some time, and had its origin, he believed, in an attack of scabies. Whilst he was speaking to me I observed that his voice was rough and loud, and that he frequently hawked up and expectorated small quantities of a reddish sputum. At that time I was making examinations of lung blood in connexion with another subject, and as this man's sputum afforded a favourable opportunity for examination, I placed a specimen under the microscope. The sputa, which to the naked eye appeared to be made up of small pellets of rusty pneumonic-like spit, specks of bright red blood, and ordinary bronchial mucus, contained, besides ordinary blood and mucus corpuscles, large numbers of bodies evidently the ova of some parasite. These bodies were oval in form, one end of the oval being cut off or shut in by an operculum, granular on the surface, blood-stained, measuring on an average  $\frac{1}{300}$ "  $\times$   $\frac{1}{300}$ " (Figs. 1, 2, and 3). Firm pressure on the covering glass caused them to rupture and their contents to escape, the shell being left empty and fractured at the opercular end (Figs. 4, 5); though empty, the shell had a pale brownish-red colour. No distinctly organised embryo could be made out in the uninjured ovum, but when the contents were expressed they resolved themselves into oil masses, and granular matter having very active molecular movements. A delicate double outline could be made out in most of the ova. They were so numerous that many fields of the microscope showed three or four of them at once.

Two days afterwards I again examined this man's sputum, and found it full of ova as on the previous occasion. I asked him to come again and to supply me from time to time with



Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.

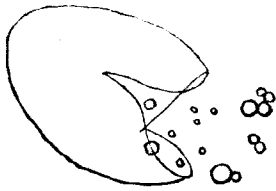


Fig. 5.



× 350.

PLATE to illustrate Dr. MANSON'S Paper on *DISTOMA RINGERI*.

Fig. 6.

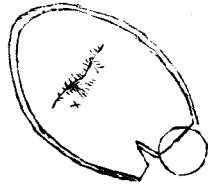


Fig. 7.

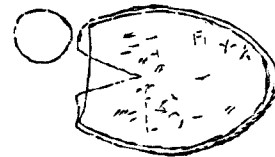
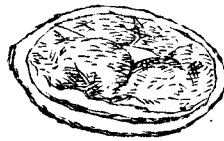


Fig. 8.



× 350.

Fig. 9.



Natural size of Parasite.

PLATE to illustrate Dr. MANSON'S Paper on DISTOMA RINGERI.

sputum, but he did not return, and has left the neighbourhood, I believe. I hoped to attempt successfully the hatching of the ova, as has already been done in the case of other distomata, but his disappearance and my failure to get another and similar case oblige me to postpone the experiment.

At his first visit I obtained the following particulars of his case:—

Tso-TONG, male, æt. 35; native of Foochow; a secretary in the Salt Office; resident in Amoy about one year.

He was born in Foochow city, and lived there till he was 21 years of age; he then went to Tecktcham, a town in North Formosa, about two days' journey from Tamsui, and resided there for four years; then he returned to Foochow for a year and a half. He was again sent to Tecktcham for a second service of four years. He returned again to his native town for a year, and was then sent for six months to Henghwa. Afterwards he lived successively in Foochow, one year; Amoy, a year and half; Foochow, four months; and, again, Amoy for one year, where he is at present stationed. A year after his first arrival in Tecktcham, when he was 22 years of age, he first spat blood. Every day for 19 days he brought up from an ounce to half an ounce of blood; he emaciated slightly, but had very little cough. Hæmoptysis returned about six months later, smaller in quantity, but, as in the former attack, the blood at first was pure, unmixed with mucus, and of a bright red colour; this second attack lasted for a few days only. Since then he says he has spat blood for two or three days at a time, in small quantities, every second or third month. He has never had much cough, and he says the blood is always mixed with mucus after the first mouthful. Once during two years he had no blood-spitting. Though rather thin, he enjoys good health. I could discover no signs of lung disease on auscultation. His father is dead, but never had a cough; his mother had a cough and died 10 years ago. He has had two brothers and two sisters; they are all of them alive and in good health.

When I discovered the ova in this man's sputum I recollected Dr. RINGER'S parasite, and that the Portuguese in whose lungs it was found had also lived for many years in North Formosa; and I came to the conclusion that this Chinaman's lungs probably contained a similar parasite, and that it was the cause of his blood-spitting. At my request Dr. RINGER sent me the solitary specimen he had found a year before. It was preserved in spirits of wine. I placed a little of the sediment in the spirit under the microscope, and found in it several ova of the same shape, colour, and dimensions as those I some time before found in the Chinaman's sputum. Most of the ova were ruptured; a few, however, were still perfect (Figs. 6, 7, 8). The parent parasite was of the shape, size, and outline represented (Fig. 9). It was of a light brown colour, firm, leathery texture, and measured  $\frac{1}{3}\frac{1}{2}'' \times \frac{5}{3}\frac{1}{2}'' \times \frac{1}{3}\frac{1}{2}''$ . It was evidently a distoma; but, not feeling sure if it was a new species or not, I sent it to Dr. COBBOLD, who has pronounced it to be new, and has named it *Distoma Ringeri*, after the discoverer. Referring to the specimen, he says:—

I satisfied myself that the fluke was new to science, and accordingly I propose to call it *Distoma Ringeri*, after the discoverer. Though mutilated, the oral sucker was well shown, as also were traces of an organ which I regarded as the remains of the ventral acetabulum. When flattened on a glass slide, the capsules of the vitellarium were well seen, and occupied fully four-fifths of the body, lying deep under the dermal surface. The worm reminds me very much of *distoma compactum*, which many years ago I detected in the lungs of an Indian ichneumon, but it is much larger and evidently a distinct species.—*Journal of the Quekett Microscopical Club*, No. 44, August 1880.

We are as yet not in a position to say much about the pathological significance of this parasite. I do not think it common in this locality, but when practising in South Formosa I recollect seeing many cases of chronic and oft-recurring blood-spitting without apparent heart or lung lesion, and it is just possible that the hæmoptysis in many of these cases was caused by *distoma Ringeri*. My patient told me that blood-spitting was a very common complaint in Tecktcham.

The intermediary host or hosts, the geographical distribution, and the mode of entrance of the parasite into the lungs offer a very interesting field for future investigation.\*

\* In the *Lancet* (1880, vol. ii, p. 548) a summary appears of a paper by Professor BÆLZ of Tokio in which the discovery of a new lung parasite is announced. It is possible that the cystic bodies containing jelly-like material and enclosing colourless spherules, which Professor BÆLZ classes with the gregarinæ, may be an embryonal form of the *Distoma Ringeri*. The point is worth investigation, and it may perhaps be cleared up by careful examination of the sputa from cases of that form of hæmoptysis, common among natives of China, which is unassociated with organic disease of the lungs.

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D.—Additional Notes on *Filaria Sanguinis Hominis* and Filaria Disease.\*

By PATRICK MANSON, M.D.

I REVERT to this subject in continuation of my paper in last year's Reports, in order to bring forward some evidence lately obtained, corroborating unmistakably my conjecture as to the habitat of the parent filaria. Those who have followed these investigations will remember that, reasoning from the position in which I found in certain cases the ova and embryos of the parasite, I concluded that the parent worm lived in the lymphatic trunks. The following are my notes of a case in which I found the mature parasite *in situ* and in the place conjectured. The parent worm has been found by BANCROFT in Australia, LEWIS in India, ARAUJO in Brazil; but this is the first time, as far as I know, in which it has been possible to state precisely from direct observation the particular structure it occupied. I therefore think the observation of sufficient value to justify its publication.

Case 57. *Lymph Scrotum: Filaria Embryos in Lymph from Scrotum, but not in the Blood; Excision of part of the Scrotum; Parent Filaria in dilated Lymphatic.*

PHÆ, male, æt. 46; Phoolankio, Jukhæ; pedlar and farmer. Four or five years ago he noticed that after much walking had pain in both groins along the course of the spermatic cords, but he says it was never or very seldom associated with fever. He has never had inflammation or abscess of the scrotum. At first there was swelling of and pain in the groin lymphatics, but on the bursting of a vesicle which had formed on the scrotum and the escape of much fluid these subsided. During the first year or two, scrotal discharges occurred only once or twice a year, then they became more frequent, and during the last three months the discharge has been nearly constant. It may stop for a day or two occasionally, but as a rule the scrotum drips lymph night and day, perhaps to the extent of 10 or 15 ounces in the 24 hours. The discharge, he says, is always clear like water, and when collected in a bowl, coagulum with red particles and streaks on it forms rapidly. Has never had chyluria nor any serious illness. He is very thin and anæmic, but though much debilitated, is in fairly good health.

October 11th, 1880.—Inguino-femoral glands on both sides enlarged, especially those on the right side; they are neither distinctly varicose nor firmly indurated, but have a soft spongy feel. The bulk of the scrotum is only slightly increased, but everywhere on its dusky red lower surface are scattered innumerable minute vesicles, varying in size from a No. 6 to a No. 2 shot. Pricking any of these permits the escape of a clear watery fluid. As I examine the scrotum, this fluid, oozing from some ruptured vesicles, drips constantly. The right testicle is absent, probably undescended; there is no hydrocele on the other, which feels large and healthy. The under surface of the sheath of the penis is somewhat swollen, but is not vesiculated. The scrotum feels soft and silky. There is no elephantiasis or swelling of the legs.

The clear watery nature of the lymph is peculiar. I found, in a short examination of sediment of some drawn at 11 A.M. to-day, one embryo filaria. I collected two other specimens of lymph, one drawn between 4 and 5 P.M., the other at 7 P.M., and stood the three specimens to await resolution of coagulum.

Blood drawn from the finger at 7.45 P.M. had no filariæ; again, at 8 P.M., examined a large slide,  $1\frac{1}{2} \times 1$ ", but found no filariæ. The blood is very watery and deficient in corpuscles.

\* See *Customs Medical Reports*, xiii, 30; xiv, 1; xviii, 31.

October 12th.—Examined the sediment of the three specimens of lymph, viz., that drawn yesterday at 11 A.M., at 5 P.M., and at 7 P.M., and found embryo filariæ in all of them, two or three in every slide of sediment. It is evident from this that the filariæ observe no periodicity while they are in the lymph, and that reproduction is a continuous process.

In this case I believe the obstruction in the lymphatic circulation of the scrotum is very low down, probably not higher than the inguino-femoral glands, and that it is complete, because, 1st, had the lymph regurgitated after passing through glands, it would probably be milky or sanguineous, and be much richer in corpuscles than it is; 2nd, it is clear and watery, as it is near the radicles of lymphatics; 3rd, there is an absence of marked varicosity of the lymphatic glands it first reaches (were the obstruction higher up the lymph circulation, these lower glands would be distended by accumulating lymph); 4th, filariæ in lymph, but not in the blood—proving that the obstruction is complete. I think it probable, considering these facts, that the parent worm is between the surface of the scrotum and the first lymphatic glands, and that we will find it when the scrotum is excised. (This was written before the operation.)

October 15th.—Removed part of the scrotum this forenoon. The dripping of lymph continuing, I thought it advisable to operate to save the man's life. As he lay on the operating table under chloroform, I could see the anterior border of the spleen bulging out the relaxed and wasted abdominal muscles, and could feel that the organ was very much enlarged. Under such circumstances, I generally abstain from all serious operations; but when I remembered the corpuscular and watery state of the blood, the absence of a history of malarial fever—the usual cause of splenic tumour here,—the probability that it was the result of the state of the blood, and that this, again, was caused by the constant day and night dripping of lymph from the scrotum, I determined to proceed. The operation was a very simple affair. I dragged down the affected portion of the scrotum till it was clear of the testicle, transfixed the fold thus formed with a finger knife, cut upwards and then downwards, removing a circle about  $2\frac{1}{2}$  or 3 inches in diameter of soft, spongy, watery scrotum. Only three arteries required ligature. Pressure with the palm of the hand over the right inguino-femoral glands forced from an enlarged lymphatic on the upper and right corner of the wound a stream of lymph the thickness of a fine knitting needle, and with a projection of 3 or 4 inches. The lymph thus expressed was clear and watery. I failed to do the same on the left side. The solitary testicle—the left—was healthy. The edges of the wound were brought together and united with catgut sutures.

The scrotum when excised had been placed in a clean bowl, and when the operation was finished I took it up and carefully examined the cut surface. Finding nothing unusual, I folded it up, intending to examine it at my leisure. However, being curious about my prognostication, I took it up again, and, unfolding and exposing the cut surface, saw wriggling on it very vigorously a long and slender worm, of a catgut opaline look, the thickness of a medium-sized horse hair. One end of the worm was free, the other entered the cut end of the lymphatic corresponding to that from which I expressed the lymph on the right side. About 2 inches of the worm was free. I tried to coax out the rest with my finger, but failed. The worm appeared to be working back again into the scrotum. Fearing it would succeed in this, and also being afraid to crush it with the forceps, I laid it on the handle of a scalpel. When it had partly dried and adhered, I made gentle traction, but the worm snapping in the vessel, I procured only about 2 inches of the free extremity, with long pieces of uterine tubes and alimentary canal dangling from the transverse fracture of the integument.

I did not attempt any further examination of the scrotum (which contains the caudal end of the female, and probably the male worm), but placed it in spirits, and have sent it to England.

Dr. BENNETT, of H.M.S. *Swinger*, was present and assisted at the operation and saw the worm.

The same evening I examined with the microscope that part of the worm I had broken off. It was the head end of a female. The body was quite plain, without any markings, and tapered rather abruptly to the simple somewhat club-shaped mouth. The vagina opened about  $\frac{1}{25}$ " from the mouth; uterus was packed with embryos in different stages of development. In the lower part of the uterine tubes the embryos lay at full length, outstretched as we see them in the blood, and the sheath was very distinct in one embryo that had escaped from the vagina. This particular worm was certainly not oviparous. The following are my measurements, carefully made:—

Greatest diameter of body . . . . .	$\frac{1}{125}$ "
Diameter of alimentary canal . . . . .	$\frac{1}{400}$ "
"    head at shoulder . . . . .	$\frac{1}{450}$ "
Orifice of vagina from mouth . . . . .	$\frac{1}{25}$ "
Diameter of body at vagina . . . . .	$\frac{1}{125}$ "
Ova before differentiation of embryo, cleavage complete	$\frac{1}{850}$ " $\times$ $\frac{1}{850}$ "
Ova after differentiation of embryo . . . . .	$\frac{1}{590}$ " $\times$ $\frac{1}{700}$ "
Diameter of uterine tubes . . . . .	$\frac{1}{200}$ "
Free embryo . . . . .	$\frac{1}{95}$ " $\times$ $\frac{1}{3000}$ "
Length of sheath visible beyond the head of the free embryo . . . . .	$\frac{1}{1400}$ "

The animal was mounted in urine (of a specific gravity similar to that of lymph) for examination. In such a medium the parts retain their natural proportions; if mounted in water, glycerine or spirits, there is often much distortion, and an incorrect idea of relative and actual size produced.

October 15th.—Doing well. A slide of blood drawn from the finger at 5.30 P.M. contained no filariæ.

October 16th.—One slide of blood drawn at 5.30 A.M. contained no filariæ.

October 26th.—Had an attack of fever yesterday, and he is still hot. The sheath of the penis is considerably swollen, but otherwise the case is doing well; the wound is granulating kindly, and there has been no escape of lymph since the operation.

November 3rd.—Wound nearly healed. Swelling of penis subsided. Patient, who has been taking large quantities of iron, much stronger; spleen smaller; blood still very deficient in corpuscles; one slide drawn at 6 P.M. contained no filariæ.

November 6th.—Wound healed; no filariæ in the blood; going home to-morrow.

E.—Dr. B. S. RINGER's Report on the Health of Tamsui and Kelung  
for the Year ended 30th September 1880.

DURING the past twelve months the health of the foreign community at these ports has been comparatively good. During the summer, as usual, malarious fevers were somewhat troublesome, but in most cases not very severe.

In one patient, who has resided here for more than two years, and had hitherto been entirely free from fever, an attack of well-marked tertian intermittent came on early in the summer, and lasted some 10 days or so.

I have now had frequent opportunities of observing that foreign residents in localities where so-called malarious influences exist may ward off their deleterious effects for a considerable period, even for years, but may suddenly, although living apparently under precisely similar circumstances, be seized with an attack of ague or remittent fever, and with no further cause that one can discover than perhaps a slight chill or a very brief exposure to the sun, such as would usually be passed by without a thought; and in some cases absolutely nothing out of the ordinary routine of daily life can be called to mind by the patient to account for the attack.

My experience has further shown me that when once a patient has suffered severely from remittent or intermittent fever it requires, as a rule, but a slight cause, such as getting wet or being exposed to the sun for but a short period, to start the blood poison fermenting, if I may so express it, and produce another attack.

One or two instances of continued fever lasting for two or three weeks, with a high temperature, sometimes up to 103° or 104° F., with no skin eruption, and apparently unaffected by medication, certainly not improved by quinine, have been under treatment. In these cases long exposure to the heat of the day seems to have been the exciting cause.

All such cases as the foregoing are generally put down to the influence of malaria, from which it seems to me that our knowledge of the pathology of malarious disorders is at present somewhat imperfect, and much good work might, I think, be done in this direction by careful records of all such cases in different localities, with notes of habits of life and age of patients, condition of dwellings, influence of treatment, etc.

*Excision of the Inferior Maxilla for Cystic Disease.*—A farmer, aged 35, presented himself towards the end of May, complaining of a swelling in the face and a foul discharge into the mouth, the symptoms having commenced about two years previously. On examination, a hard, painless, and immovable tumour was observed on the right side of the face, extending from the articulation of the jaw to a point midway between the angle and the symphysis, and on the inner surface of the cheek, near the molar teeth, an ulcerated opening was found, from which a most offensive discharge was poured into the mouth, and into which a probe could be passed for about 2 inches. Several of the teeth were loose, and the whole row was



pushed considerably out of the natural curve into the floor of the mouth. The patient had been unable to eat on that side for a long time, and was extremely anxious to have something done to relieve him, and had come from a distance of several days' journey in the country. On the 4th June he was placed under the influence of chloroform and an incision was made, commencing just in front of the articulation and extending downwards along the margin of the jaw to the chin, where it was carried upwards and terminated below the lip. The soft tissues of the cheek were now dissected off close to the tumour, both ends of the facial artery were secured, and bleeding vessels, which were very numerous, were tied as soon as severed. The lower margin of the maxilla was now exposed by careful dissection close to the bone, which was then partly divided by a small saw into the socket of a bicuspid tooth, which had been previously extracted, and the division of the bone was completed with a pair of cutting forceps, and the jaw elevated and carefully cleared from all soft tissues. The ligaments were divided and the head of the bone turned out of the socket. The wound was loosely filled with oiled lint, and the flap adjusted with silver sutures.

A subcutaneous injection of morphia was administered in the evening and the patient passed a comfortable night. The dressings were removed on the second day and the patient progressed favourably. Ten days after the operation a considerable amount of healing had taken place, but some pain was experienced near the spot at which the maxilla had been divided. A loose piece of bone about half an inch square was found in the wound and extracted without difficulty. From this time forward the patient continued to improve, and in about six weeks time left the hospital with the wound firmly healed all but a small opening at the base, from which a little saliva flowed, but which was daily decreasing.

Examination of the tumour showed the walls of the maxilla to be widely expanded and partially separated by firm fibrous bands into three chambers, which contained a dark coloured, cheesy material. The cyst walls were quite distinct and could be readily separated from the bone, which had been in some places completely absorbed.

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*F.*—Dr. E. P. MCFARLANE'S Report on the Health of Ichang.

THE town of Ichang, situated in latitude  $30^{\circ} 14' 25''$  N. and longitude  $111^{\circ} 18' 34''$  E., lies on the north bank of the Yangtze, about 1,000 miles from the sea. The foreign population of the town is 17, and this includes 5 ladies and 2 children. The general health of the community since my arrival in Ichang nearly two years ago has been upon the whole very good. This is more especially to be noted as all the foreigners are living in native houses, and the majority of them inside the city wall, in localities where it is hardly possible for them to escape the effluvia caused by the inefficiency of sanitary arrangements.

Ichang has the name of being unhealthy from the fact that three Commissioners left it seriously ill. Two died of abscess of the liver shortly after leaving Ichang and before my arrival in the country; the third, who was Assistant-in-Charge when I arrived, had to leave in August 1879, as he was suffering from mitral disease. I do not believe that the climate was the cause of the above diseases, as the patients with liver abscess were only a very short time here when they were invalided, and probably brought the affection with them. The case of mitral disease was of several months standing before my attention was drawn to it.

Two births took place during last summer. One child died when 7 days old. It was premature, and doomed from its birth. The mother had a lingering illness owing to the bad ventilation of the house in which she was delivered, but on her removal to a building where air could find access she made a rapid recovery. Apart from feelings of languor and an occasional attack of dyspepsia experienced by those living in ill-ventilated houses, no acute or specific disease attacked a foreigner in Ichang since my arrival. A few of the community have suffered several times from ague, but it was always so slight that a dose of quinine was all that was wanted to bring about a cure.

The sanitary conditions of Ichang are most deplorably neglected, notwithstanding the comparatively good health enjoyed by foreigners in it. Efficient drainage is utterly uncared for by the Chinese in this town, and no precautions whatever are taken to prevent obnoxious smells or to clear away from the entrance of the drains the rubbish which collects there. The whole town is drained after some method, but no sooner does a heavy shower of rain fall than the streets are flooded with water, and passengers may be seen walking up to their knees in it. Privies are very numerous, and as they are emptied as a rule only once a week, their contents have ample time to undergo putrefaction. The farmers, who buy the soil for manure, come at all hours of the day and carry off their purchase through the streets of the city. As the latrines are never thoroughly emptied or washed out, the consequence is that the nuisance caused is never absent. People of the poorer class live as a rule in the open air all day, but notwithstanding their absence, their sleeping apartments remain laden with abominable odours, against which no precautions are taken by means of ventilation.

The piece of ground marked out as the English Concession is perhaps the best spot that could be chosen about the city for foreigners to reside on. It is situated on the north

bank of the river, about 300 yards from the south gate of the city. The distance will prove sufficient to enable residents to escape the obnoxious smells consequent on the bad sanitary arrangements of the town. The space is quite open and commands a magnificent view on all sides, the only native houses near being those on both sides of the street leading up to the city, and a few huts on the south side. The Concession is bounded by the river in front, and immediately to the back is a large piece of land where the Chinese in former days buried their dead. So far as I know, no interment is now made there. Here the river flows in a south by south-east direction, and is about a quarter of a mile broad in summer and somewhat less than that in winter. The city side, although not hilly, rises to a considerable extent at a distance of about half a mile from the banks of the river. The country on the opposite side (south) is rather hilly, and a few miles inland it becomes quite mountainous. Another great advantage, and perhaps the most enjoyable for a foreigner in the summer, is that the wind as a rule is from the south and blows up river. It is therefore hardly possible that it should bring anything deleterious to health, as it passes over a long stretch of mountainous country, with very little, if any, decomposed vegetable matter, and afterwards blows up river a distance of about 10 miles. This breeze, which invariably blows in the afternoon, is very fresh and invigorating in the summer. Any decomposed vegetable matter about the rice fields, which lie at a considerable distance to the back of the Concession, is blown in a northerly direction. The plot of ground has also all the sanitary advantages that could be desired, as it slopes towards the river.

The disadvantage in this piece of ground lies mainly in its liability to be inundated should the river rise several feet above its usual height in the summer. I am inclined to believe myself that should the water rise high enough to inundate the Concession, the whole city would likewise be flooded. Such catastrophes are expected by the Chinese every 10 years, and great anxiety prevailed this summer, as it is now 10 years since the last flood. Foreigners as well as natives were, however, happily disappointed. In the case of merchants or others building houses on the Concession, precautions should be taken to raise the foundations at least 6 feet high as a safeguard against the more serious inconveniences to which a householder is put when such a disaster as a flood occurs. I am decidedly of opinion that Ichang is healthy. I infer this from the facts already mentioned regarding the Concession ground, and from the general good health of the foreigners at present residing in and about the town. On the hills and in the valleys on the opposite side of the river pleasant walks can be got, although the roads are bad. The air is bracing and enlivening in all the surrounding country, and only about three miles up river is the commencement of the renowned gorges of the Yangtze, where a complete change is experienced by the visitor.

The summer of 1879 was much hotter than that of 1880. The thermometer for several days stood at 99°, and for fully five weeks we had no rain. The two hottest days of this summer were 4th July and 2nd August, the thermometer standing, as will be seen from the following table, at 91°. We have had a large share of rainfall during the hot months, which served to keep the atmosphere cool without causing any inconvenience otherwise. To my knowledge the heat had no bad effect on any of the residents.

For the following meteorological table I am indebted to Mr. ALFRED COPP, of the Inland Mission:—

MONTH.	THERMOMETER—NOON.			BAROMETER—NOON.		
	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.
March.....	70	48	57	<i>Inch.</i> 30.53	<i>Inch.</i> 29.77	<i>Inch.</i> 29.85
April.....	78	54	64	30.38	29.81	30.04
May.....	87	65	76	30.07	29.54	29.81
June.....	84	73	80	29.95	29.55	29.69
July.....	91	76	83	29.72	29.55	29.62
August.....	91	72	79	29.97	29.54	29.66

I append a table of the diseases attended to by me at the Scotch Mission Dispensary. Although I have made strenuous efforts to get natives to remain in the hospital to be cured, I have so far failed. They will undergo any amount of pain, and drink medicine *ad libitum* if permitted to go home immediately after it. I am hoping that in a year or two we shall be able to overcome their prejudice against the foreigner, and so have a better opportunity of making a clearer investigation of the diseases of this neighbourhood. Skin and eye diseases are more prevalent than any other. From the number of ague patients it will be inferred that we are not quite free from miasmatic poison, but it is remarkable that, so far as I was able to gather, no other fever is known to the natives of Ichang. The absence of epidemic disease and of elephantiasis, and the scarcity of morbid growths among the natives, are much in favour of what I have already said in regard to the healthy locality of Ichang. The last epidemic of cholera that invaded these parts was in 1850.

OUT-DOOR PATIENTS attended to at the SCOTCH MISSION DISPENSARY during the  
Half-year ending 31st August 1880.

<b>I.—GENERAL DISEASES:—</b>		Phthisis . . . . .	31 cases.
Ague . . . . .	49 cases.	Pneumonia. . . . .	14 "
Opium-smoking . . . . .	24 "	Asthma . . . . .	4 "
Cancer of lip . . . . .	1 "	<i>Diseases of Heart:</i>	
Carbuncle . . . . .	1 "	Chiefly mitral disease . . . . .	45 "
Rheumatism . . . . .	124 "	<i>Diseases of Kidneys</i> . . . . .	12 "
Scrofula . . . . .	41 "	<i>Diseases of Digestive System:</i>	
Dropsy . . . . .	2 "	Affections of mouth, teeth, etc. . . . .	44 "
Elephantiasis (scrotum) . . . . .	1 "	Dyspepsia . . . . .	225 "
Lumbago . . . . .	67 "	Dysentery . . . . .	21 "
Syphilis . . . . .	102 "	Diarrhœa . . . . .	31 "
<b>II.—LOCAL DISEASES:—</b>		Fistula . . . . .	15 "
<i>Diseases of Respiratory System:</i>		Congestion of liver . . . . .	2 "
Bronchitis . . . . .	157 "	Hæmorrhoids . . . . .	3 "
Bronchial catarrh . . . . .	22 "	Constipation . . . . .	2 "
Pleurisy . . . . .	10 "	Hernia . . . . .	15 "

*Diseases of Generative Organs:*

Hydrocele . . . . .	2 cases.
Leucorrhœa . . . . .	1 "
Orchitis . . . . .	9 "

*Diseases of Urinary System:*

Gonorrhœa . . . . .	29 "
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*Diseases of Eye:*

Conjunctivitis . . . . .	160 "
Corneitis . . . . .	145 "
Iritis . . . . .	50 "
Pterygium . . . . .	29 "
Entropion . . . . .	11 "
Cataract . . . . .	19 "
Staphyloma . . . . .	2 "

*Diseases of Cutaneous and Sub-cutaneous System:*

Abscess . . . . .	46 "
Whitlow . . . . .	2 "

Ulceration . . . . . 155 cases.

Eczema . . . . .	32 "
Ringworm . . . . .	135 "
Scabies . . . . .	941 "

*Diseases of Joints:*

Synovitis . . . . .	57 "
Arthritis . . . . .	3 "

*Diseases of Nervous System:*

General paralysis . . . . .	2 "
Hemiplegia . . . . .	4 "
Hysteria . . . . .	1 "
Diseases of ear . . . . .	53 "
Wounds . . . . .	6 "
Burns . . . . .	4 "
Fractures . . . . .	3 "
Dislocations . . . . .	9 "

G.—Dr. A. S. DEANE'S Report on the Health of Wuhu for the Half-year ended 30th September 1880.

WUHU, situated on the Yangtze, in latitude  $31^{\circ} 19' 12''$  N., longitude  $118^{\circ} 23'$  E. (approximately), has a Chinese population estimated at about 40,000. Judging from the experience I have had during the past eight months, and from what I can learn from those who have resided here for some time, the general health of the natives does not indicate an unhealthy condition of this situation. The present year, moreover, contrasts very favourably with 1879, when the Superintendent of Customs very generously instituted a free dispensary, attended by two native "doctors" to administer relief to the sick of this neighbourhood, and it is stated that over 3,000 patients were prescribed for and medicines found them, at a cost of more than  $\text{Fr} 1,000$ . This year no such tax on the Superintendent's charity has been needed.

The Chinese that presented themselves to me for treatment were few, and, with the exception of five or six cases of intermittent fever and dysentery, mostly suffered from eye diseases or were the subjects of cutaneous affections or slight injuries. This small sick rate has been undoubtedly due to the mildness of our summer, coupled with the absence of floods.

The health of the foreign community has not been as satisfactory as I should wish. From time to time some have complained of a general feeling of malaise and considerable gastric disturbance, accompanied at times by diarrhoea, at others by constipation—the axillary temperature showing a rise of from  $1.5^{\circ}$  F. to  $3^{\circ}$  F. above the normal,—with a general indisposition for work towards the afternoon, the rise in temperature being best marked at this time also. These symptoms continue from two to six days, when they pass off under the influence of quinine. In these slight and latent forms of malarial fever the stages of rigor and pyrexia were wanting, the third stage being more or less marked in every case.

The cause of these attacks is not to be found in habits or mode of living, and although the climate is in most cases blamed, it is in truth far from being unhealthy. On the contrary, I think one of the healthiest European settlements could be made here, a few yards more inland and at the back of the present foreign habitations.

The houses occupied by foreigners are for the most part situated on the river bank, on alluvial soil, and in summer when the river is high it percolates through this light sandy deposit, the surface of which is in some places not more than from a few inches to three or four feet above the level of the water. Consequently, during the latter part of spring, in summer and early autumn the basement stories of these houses must be damp, which in its turn renders the air of these apartments humid, and perhaps malarious at certain seasons. Few of the houses which can be occupied by foreigners possess upper stories; necessarily, some residents have to live on the ground floor of edifices which are not of the best architecture, and in an atmosphere

not conducive to health, to which I think the symptoms above detailed are mainly due, and not to the climate, as some people will have it.

Wuhu presents rare opportunities for the erection of a few highly sanitary dwellings on the hills which lie quite close to the town. These are small, well raised above the possibility of floods, the drainage is perfect, and for business relations with the town leave nothing to be desired. Ere long I hope to see some of them occupied by foreigners.

METEOROLOGICAL REGISTER.

MONTH.	BAROMETER.			THERMOMETER.			No. of Days Rain.
	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	
	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	°	°	°	
April .....	30.45	29.70	30.09	79	41	57.00	14
May .....	30.09	29.57	29.92	88	53	69.93	11
June .....	30.04	29.64	29.80	87	64	73.06	8
July .....	29.92	29.59	29.77	85	71	78.40	10
August .....	30.09	29.58	29.81	87	66	78.10	12
September .....	30.29	29.87	30.05	85	65	72.09	6

H.—Dr. E. I. SCOTT'S Report on the Health of Swatow for the Half-year ended 30th September 1880.

I AM indebted to the courtesy of Mr. Harbour Master RAE for the following table of meteorological observations for the summer six months. The past season has been one of the coolest for many years at this port, and also one of the wettest.

ABSTRACT FROM METEOROLOGICAL TABLE.

MONTH.	WINDS.					MERCURIAL BAROMETER.				THERMOMETER.						RAIN AND FOG.			TIDES.	
	Number of Days N. to E.	Number of Days E. to S.	Number of Days S. to W.	Number of Days W. to N.	Number of Days Calm.	Highest by Day.	Lowest by Day.	Highest by Night.	Lowest by Night.	Highest by Day.	Lowest by Day.	Highest by Night.	Lowest by Night.	Average Wet Bulb.	Average Dry Bulb.	Number of Days Rain.	Number of Inches Rainfall.	Number of Days Fog.	Average Rise, Spring Tides.	Average Rise, Neap Tides.
	<i>D. h.</i>	<i>D. h.</i>	<i>D. h.</i>	<i>D. h.</i>	<i>D. h.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>Inch.</i>	<i>°</i>	<i>°</i>	<i>°</i>	<i>°</i>	<i>°</i>	<i>°</i>	<i>D. h.</i>	<i>Inch.</i>	<i>D. h.</i>	<i>Ft. in.</i>	<i>Ft. in.</i>
April .....	17 19	4 13	1 7	1 14	4 19	30.33	29.89	30.28	29.92	80	61	76	54	67	68	5 10	3.475	2 0	6 6	4 7
May .....	14 7	10 0	4 13	1 9	1 5	30.11	29.87	30.10	29.87	86	70	82	67	70	73	7 22	5.975	...	6 9	5 5
June .....	5 18	11 11	11 10	...	1 9	30.05	29.78	30.03	29.76	86	77	82	70	78	80	12 12	14.725	...	7 6	6 3
July .....	2 5	14 17	10 22	...	3 4	30.00	29.65	29.98	29.67	92	82	86	78	79	83	2 20	4.600	...	7 0	6 3
August .....	1 14	12 9	13 19	1 10	1 20	30.06	29.63	30.09	29.64	92	80	87	78	79	84	2 21	5.175	...	7 3	6 5
September...	14 6	6 17	2 1	3 0	1 50	30.11	29.64	30.09	29.37	93	80	88	76	78	81	3 17	5.700	...	7 0	5 10

Note.—Tides very irregular; not to be depended on, being greatly influenced by the winds.

The health of foreigners has been unusually good. I have had hardly any serious cases to deal with, and the ordinary cases of summer diarrhœa and fever have been less frequent and less severe than usual. It has been a very healthy season for natives also, for, as far as I can learn, there has been no serious illness of an epidemic character, a circumstance rather remarkable, considering the extreme dirt of Chinese towns and villages. I have not heard the word cholera used once, though usually during the hot months this disease is endemic amongst Chinese. I presume the amount of rain which fell helped to produce this satisfactory state of affairs, by flushing and cleaning out the drains, carrying away much, if not all, the decomposing vegetable and other matters which accumulate in such quantities.

There has been a grievous disease epidemic amongst the cattle in this district, killing as many as 90 per cent. of the cows and buffaloes in some villages. I have endeavoured to ascertain



the exact nature of this complaint, but, possibly from unwillingness on the part of the Chinese to give information concerning it, I have been unable to get any reliable data. I can only learn that the disease seemed somewhat like cholera, either prostrating the animal at once and ending fatally in a few hours, or beginning with diarrhœa, which, gradually becoming worse, ended equally fatally in a few days. The Chinese ate the flesh of the diseased animals with impunity, and I heard some of them attributing the remarkable healthiness of this summer to the fact that all the disease was amongst the cattle, and that the human animals escaped on this account.

It may be interesting to note here a plague of caterpillars which visited us during the months of June, July and August, literally covering the fir trees (on which they lived exclusively), and leaving them perfectly denuded of leaves. The hill sides in many places looked as if a fire had passed over the trees and scorched them. The Chinese were very much afraid to handle them, as they declared them to be exceedingly poisonous—and they are right so far, as I know of two foreigners who were injured by these insects. When crushed they exude a glutinous fluid of a light green colour, which is very irritating to the skin, producing an erysipelatous rash, which causes much inconvenience for 10 days or a fortnight.

I have only to report one death among foreigners.

Mrs. B., aged 45, taken in labour with her fifth child at 1 A.M., sent for me at 11 A.M. on the same day, when I found her in labour with feeble pains; head presentation just within reach of the finger; os beginning to dilate, about the size of a sixpence. She was lying down on my arrival. Pulse good. I had delivered her of her fourth child three and a half years before, at full time, without any difficulty. Since then, though she had never been actually sick, she had suffered considerably from rheumatism in her legs, and led a very sedentary life, seldom even moving about her house, and almost never going out of it. She had not been confined to bed nor had she sought my advice for her rheumatism, which she fancied was connected with her time of life. She had menstruated very irregularly for some time. She was a very short, florid woman. The pains became strong, and the os fully dilated in the course of the day. At about 10 P.M., as the head was making little or no advance, and the pains growing feeble, while the woman was getting exhausted, I made a careful examination of the pelvis, and found the bony outlet very much contracted from side to side. At this time she was getting very low; pulse rapid and weak; constantly bringing up wind, but not vomiting; quite conscious, and complaining of much abdominal pain. I had given her beef-tea through the day, and now gave her beef-tea and brandy every half hour. As I had no instruments with me but a short forceps, and I feared I might be unable to deliver the head by version, I obtained Dr. LYALL'S assistance at 6 o'clock on the following morning, having in the meanwhile administered chloroform almost constantly, and given milk and beef-tea and brandy at intervals. Before Dr. LYALL'S arrival the pulse was very rapid and hardly distinguishable, respiration laboured, and uterine action almost altogether arrested, while the head was barely within reach of the finger. We turned and got the feet down with little difficulty, but it was only after much trouble that we succeeded in extracting the arms. The head could not be got to move, and we were obliged to break it up before we could deliver it. The measurement of the pelvis was about 3 inches from side to side, and somewhat less in the antero-posterior diameter. 10 minims of solution of ergotin in glycerine was injected into the buttock as soon as the head was delivered, and steady pressure was kept up over the uterus with the hand. In 15 minutes I introduced my hand and took away the placenta, and then five minims more of the solution of ergotin was injected into the abdominal walls. The uterus contracted fairly well, and there was no hæmorrhage. The version, craniotomy and extraction of placenta occupied three hours, and at 9.30 A.M. a binder was put on, and  $\frac{1}{4}$  grain of morphia

injected into the arm, after which the breathing became regular and steady; the uterus remained contracted, and the pulse became somewhat fuller, though it remained rapid and fluttering. During health this woman had a very feeble pulse, which I could hardly make out at any time. I counted the heart, 160 beats in a minute. Brandy and beef-tea were given her every half hour, and she was conscious when she was roused to get them, though during the intervals she lay in a stupid state. She remained conscious till 1 P.M., when she rapidly sank, and died at 3 o'clock the same afternoon.

The births have been six: three boys and three girls.

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I.—Dr. W. A. HENDERSON'S Report on the Health of Ningpo for the Eighteen Months ended 30th September 1880.

DURING a residence of eighteen months in Ningpo, I have been very much struck by the absence from amongst the members of the community of the habitual deposit of urates in the urine—the condition termed lithuria,—whereas during a long residence in Chefoo, I found it frequently existing amongst the foreigners. This pathological difference between the two localities led me to make inquiry of an individual who had removed from Chefoo to Shanghai, and who had formerly been very much subject to the deposit. As to his present state, he told me that after the change of locality he became entirely free from it, even after moderate excesses in diet. In Chefoo he had, like others similarly affected, to exercise the greatest caution in regard to diet, as any strain upon his liver was at once followed by the deposit. In those subject to lithuria, as a rule the deposit immediately appeared after the consumption of an immoderate amount of any article of diet, solid or liquid, with the exception of two, in which excess would be difficult, viz., bread and water. From another individual who had resided in Chefoo I got a like experience. Previous to his taking up his abode in Chefoo he had not been troubled with the affection. After residing there for some time he lost weight considerably. This he was able to gain in part when in full exercise, but it was lost again when the exercise was relaxed. Now, with change of residence to the south, he has recovered his original weight. A third individual, with a strong tendency to lithuria, was compelled periodically to seek temporary refuge in a moister climate, and invariably returned in a state of vigour, which he could not otherwise have attained. A fourth was so affected with lithæmia that his medical adviser ordered him to leave Chefoo, and the change was followed by the happiest results. The explanation of the presence of the deposit in the one locality and its absence in the other seems to be found in the difference between the two climates, the northern being dry and the southern moist. As the hygrometry of both ports has been neglected, we are left to form a notion of their relative humidity from the mean daily range of temperature. BUCHAN states that “the daily range is least in wet climates and in temperate climates. Hence it is less in Ireland than in Scotland, greater in England than in both these countries, and still greater on the continent of Europe.” The mean daily range at Chefoo for the year 1879 was 17°; that of the previous year was 16°. These figures are not obtained by unusual dryness during a few months and corresponding dampness in others, but by a general monthly approximation to the average. During a couple of varying months each year, it rises as high as 20°. In the month of June 1876, the year of drought, it was 26°. During 1878 and 1879 the lowest monthly range was 12°. In Ningpo the range has not been observed since 1872 and 1873. Previously it had not been noted. The mean daily range of those two years was 9°. In Ningpo the highest monthly ranges are about 13°, and the lowest 5°. It is thus seen that Ningpo has about half the range of Chefoo. To these figures several objections—amongst which is that they are the difference between the mean of the coldest and the mean of the warmest of the 24 hours—might be made, but unfortunately they are all that can at present be

offered on the subject. Chefoo may be regarded as bracing or exciting, according to the degree of dryness, and Ningpo as sedative or relaxing, according to the presence or absence of excessive humidity. Judging from what I have stated, there appears to be some causal connexion between the tendency to lithæmia in Chefoo and the dryness, and, on the other hand, that the heat and moisture of Ningpo is not only non-conducive to the development of the lithæmic state, but perhaps favourable to the relief of the morbid condition. MURCHISON,\* in his lectures on functional derangements of the liver, does not discuss the question of climate either in relation to the production or cure of lithæmia. Dr. GARROD,† in his work on gout, which disease is a result of lithæmia, while giving its usual recognised causes, mentions the frequent summer immunity from gout, but does not state whether it is most influenced by moist or dry air. In my experience of Chefoo, the tendency to the lithate deposit existed during the dry heat as well as during the dry cold, and throughout both seasons the same caution was necessary. In Ningpo there are several individuals who I am sure would be unable to bear the strain of Chefoo unless living in the plainest possible way; but residing as they do in the more southern climate, they have a greater range of diet, and not merely with regard to food, but they can indulge in alcohol and tobacco in a way in which it would be difficult for them in the dry and stimulating atmosphere of Chefoo. Not that I believe it would be difficult to produce lithæmia, and ultimately gout, in the individuals in question, as we know that this disease has been produced in all climates wherever there has been in diet continued nitrogenous and alcoholic excess. As to the rationale of the connexion between lithæmia and the climates mentioned, the following appear to me to be at least a few of the possible links in the chain of causation. As a dry atmosphere may affect the lithic acid diathesis through elimination, oxidation, and the circulation, to each of these modes it would be well to separately refer.

1st. Elimination.—Of the three, this is the most evident. Urea in health is almost solely eliminated by the kidneys; the fractional amount thrown off by the skin may be practically disregarded. Now a less amount of fluid passes through the kidney in a dry than in a moist climate, owing in the former to the greater relative activity of the lungs and skin. From the lungs of those who drink in dry air, the dry air quaffs large draughts of water, giving rise to deliciously exhilarating feelings. Not only does dry air rob the blood of its water by the lungs, but also by the skin. Perspiration is less sensible in the dry than in the moist climate; yet we know that it is greater, the dry air rapidly carrying it off as it is formed. On the contrary, the moist climate checks evaporation from both of those organs. Hence, in those who have the minimum amount of renal tissue, after any excess in diet there will be a tendency to retention of waste albuminous matters, owing in the dry climate to the minimum elimination of fluid by the kidney. In such individuals, it is of the highest importance that there ever be a due amount of water passing through the Malpighian tufts for the sluicing of the tubular epithelium.

2nd. Oxidation.—PARKES,‡ in his work on hygiene, mentions, without comment, an experiment of LEHMANN'S on pigeons, which when placed in moist air exhale carbonic acid in larger quantity than in dry air. This implies increased oxidation, which is facilitated by a

\* *Functional Derangements of the Liver*, by CHARLES MURCHISON, M.D., LL.D., F.R.S.

† *Gout and Rheumatic Gout*, by A. B. GARROD, M.D., F.R.S.

‡ *Manual of Practical Hygiene*, by E. A. PARKES, M.D., F.R.S.

more dilute state of the substances to be oxidised. It is to be remembered that birds eliminate waste albuminous matters in the form of uric acid. From the above it might be inferred that the blood of birds has a high specific gravity; but on referring to experiments upon this point, we find that while the blood of the duck and the fowl is a little above the average specific gravity of that of man, that of the pigeon and the raven is lower. Then in examining the relative amounts of the corpuscular and plasmic parts of the blood, it is found that the former is much less in the owl than in man, but much greater in the vulture. From these different conditions of the blood the common state lithuria is not to be inferred; and further, from these we would be inclined not to look so much to the blood as to the tissues for the explanation of the phenomenon. Urea is generally admitted to be formed principally in the liver. Conceive an individual with the minimum amount of hepatic tissue necessary to health, and supply it with less than the amount of fluid necessary to complete oxidation, and the result would be suboxidation with its attendant lithates. This would be especially the case after an excess in diet.

3rd. The Circulation.—This is the least evident of the three modes, and upon it I would not lay much stress. Dry air increases the rate of the blood by its *vis a fronte* effect. This stimulation may tend in the lithic acid diathesis, especially when the vessels are of large calibre, to local reaction. Occasionally associated with lithuria, I have observed that the vessels are large. One case that came under my notice well illustrates to my mind the effect of such an atmosphere as Chefoo upon a weak circulation that may be brought under its influence for a lengthened period. The individual in question had no tendency to lithæmia, nor were the vessels of undue calibre, but the capillary walls were thin, and the heart weak, though there was no disease, cardiac or otherwise, generally termed organic. Continued residence in this case was followed by general anasarca. Removal to a moist climate in the course of a couple of months gave rise to diuresis, with return of the body to its normal size.

It is here worthy of notice that Dr. WATSON of Newchwang, in an early number of the *Customs Medical Reports*, well described the effect of the climate of North China on the nervous system. Lest it be thought that an undue importance is attached to the question of climate, I would distinctly state that it is simply here regarded as an element in the complex cause, of which the principal factors are dietetic errors, together, it may be, with some hepatic defect, either smallness in the amount of the glandular tissue, or of an inherited or acquired character. I would further guard myself by pointing out that my remarks as to the effects of climate on lithuria apply only to long residence, and not to the short stay made by summer visitors to Chefoo. In the case of the latter, great range of temperature simply means cool nights and the possibility of refreshing sleep, and the dryness of the atmosphere is the best remedy for systems poisoned by the muggy, mildewy, and malarious climates of the south. Nor do my remarks apply to the majority of the residents in Chefoo, among whom are to be found splendid specimens of humanity, with livers equal to any festive occasion, and who will be able to enjoy their champagne and their champagne atmosphere to the close of the natural term of mundane existence.

In Ningpo, if the effects of uric acid are not so apparent, there is another poison, Malaria, of which the consequences are much more extended in range, and of a more dangerous character.

To enumerate the results of lithæmia in Chefoo, we would be compelled to run down in part the gamut of diseases given by MURCHISON; but to attempt the description of the effects of malaria in Ningpo, we would find before us a task of still greater extent. Ningpo is situated on the banks of a river, 12 miles from the sea. It is surrounded by an alluvial plain nearly encircled by hills. The plain has a diameter of about from 20 to 30 miles. It is intersected everywhere by canals and irrigating ditches for the cultivation of rice, of which the fields are kept flooded with water from June to the end of September. Here are the conditions favourable to the development of malaria, and its protean forms are everywhere around us manifest. Amongst a few of the malarial disorders may be mentioned neuralgia, recurrent diarrhœa, enlargement of the liver and spleen, anæmia with subnormal temperature, and fever, intermittent and remittent. Of ague is to be seen the quotidian, tertian, and quartan types, but principally tertian.

During the last hot season, but few of my patients have escaped fever. Among them there has been but little diarrhœa and no dysentery, where during the previous hot season the converse obtained,—little fever, but a considerable amount of diarrhœa. This comparison is interesting, as the hot season of 1880 has been cool and moist, while the hot season of 1879 was hot and dry for Ningpo. The thermometer for the four months, June, July, August, and September 1880, shows a mean maximum of  $81^{\circ}.2$ , and a mean minimum of  $75^{\circ}.3$ . The difference,  $4^{\circ}.9$ , indicates in a measure the amount of moisture. The Customs noted during that period rainfall on 53 days, and that in June the prevailing winds were from the south. In July and September they were variable, and in August from the north. In striking contrast are the meteorological returns for 1879. For the corresponding months the mean maximum was  $85^{\circ}.5$ ; the mean minimum was not accurately noted, but was proximately  $77^{\circ}$ . Rain fell on 28 days, and the prevailing winds were southerly.

The fever that has prevailed amongst the foreigners has been of the remittent type. In some it begins with a low temperature of from  $99^{\circ}$  to  $100^{\circ}$ , in others of  $102^{\circ}$ , and in a third class from  $103^{\circ}$  to  $105^{\circ}$ . As I have found all the forms amenable to treatment, without resorting to change of air, I am unable to describe the course they would naturally take if left to themselves. However, two cases in which the temperatures were low came under my notice. The cases were not subjected to treatment, and ran on for six weeks. Further, I have heard of a number of cases continuing for fully that length of time. Last year I watched one case of the lowest form in which the temperatures varied from  $99^{\circ}$  to  $100^{\circ}$ , and which persisted for several months, no active measures of treatment having been resorted to. I have seen the same elsewhere in China. The sisters of charity tell me that in their experience the fever has a course of from nine days to six weeks, and rarely, though occasionally, fatal.

Though I am told that the mortality is small amongst the Chinese, when not properly treated it is to be seen inducing the disorders already mentioned. The lowest form cannot well be detected without the thermometer, and when this instrument is not used I am of opinion that it may run on for months without being diagnosed, gradually undermining the constitution, and producing, like the other forms of fever, the pallid, washed out, and miserable specimens of humanity which around us are everywhere to be seen.

During the heavy rains of June, when vegetable growth was active and the minimum amount of waste matter was in the surrounding paddy swamps, amongst the foreigners there were no cases of fever. Then in July three cases appeared; in August, eight; and from thence the numbers increased at a rapidly accelerating ratio to the middle of October, involving nearly the whole community in its tide. During October it has also been very prevalent amongst the natives, and I am told that, owing to the numbers stricken by it, in many places the crop has been with the greatest difficulty gathered. Since writing the above, it is reported that considerable numbers of the Chinese have died from the fever.

In concluding this Report, I must express my deep indebtedness to Mr. WALTERS, of the Customs, for calculating for me the totals of the thermometric observations both of Chefoo and Ningpo.

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K.—DR. ALEXANDER JAMIESON'S Report on the Health of Shanghai for the Half-year ended 30th September 1880.

ABSTRACT of METEOROLOGICAL OBSERVATIONS taken at the Observatory of the Jesuit Mission at Zikawei, for the six months ended 30th September 1880. Latitude, 31° 12' 30" N. Longitude E. of Greenwich, 8<sup>h</sup> 5<sup>m</sup> 44.63<sup>s</sup>.

DATE.	Barometer at 32° F.	THERMOMETER.		Elastic Force of Vapour.	Humidity.	Ozone.	Velocity of Wind observed hourly.	Mean Direction of Wind.	Total Evaporation during Month.	Total Rainfall during Month.	REMARKS.	
		Diurnal Mean Temperature in Shade.	Extreme in Temperature in Shade.									
1880.	Inch.	°F.	°F.	Inch. of Mercury.	0-100.	0-21.	Miles per Hour.		Inch.	Inch.		
April....	Max...	30.416	65.3	78.3	0.654	100	19.0	27.6	N. 89°.7 E.	2.93	5.06	On the 9th, there was distant thunder at 9.30 A.M., but no storm.
	Mean	30.062	55.8	—	0.356	80	12.5	9.5				
	Min....	29.602	44.6	32.0	0.150	37	8.0	—				
	Range	0.814	20.7	46.3	0.504	63	11.0	—				
May....	Max...	30.075	76.5	90.7	0.925	100	21.0	29.9	S. 34°.9 E.	3.80	3.09	Storm on the 9th; lightning on the 10th, 11th, and 12th.
	Mean	29.860	67.7	—	0.530	78	11.0	9.8				
	Min....	29.487	56.2	52.0	0.228	27	6.0	—				
	Range	0.588	20.3	38.7	0.697	73	15.0	—				
June....	Max...	29.972	85.3	95.4	1.048	100	17.0	18.1	S. 75°.4 E.	3.21	3.59	Storm on the 29th, which was the only day on which lightning was observed during the month.
	Mean	29.781	73.1	—	0.650	80	10.1	8.0				
	Min....	29.474	65.7	55.0	0.275	31	5.0	—				
	Range	0.498	19.6	40.4	0.773	69	12.0	—				
July....	Max...	29.839	86.4	95.4	1.163	100	15.0	17.1	N. 87°.0 E.	1.90	9.51	During the first 20 days, storms were frequent. Up to the 19th, 16 thunderstorms occurred, and four storms unaccompanied by thunder.
	Mean	29.677	78.5	—	0.919	91	8.1	6.2				
	Min....	29.430	73.3	67.6	0.677	66	—	—				
	Range	0.409	13.1	27.8	0.486	34	15.0	—				
August	Max...	30.012	81.9	93.4	1.039	100	14.0	20.0	N. 32°.3 E.	2.42	5.95	Three storms occurred, accompanied on the 5th and 26th by heavy rain.
	Mean	29.704	77.6	—	0.803	87	—	5.8				
	Min....	29.304	70.2	64.6	0.524	51	1.0	—				
	Range	0.708	11.7	28.8	0.515	49	13.0	—				
Sept....	Max...	30.195	89.1	—	1.055	100	—	19.56	N. 74°.0 E.	2.45	6.13	Storms occurred on seven days, sometimes accompanied by thunder.
	Mean	29.947	75.2	—	0.745	85	8.5*	6.57				
	Min....	29.800	61.0	—	0.425	46	—	0.62				
	Range	0.395	28.1	—	0.630	54	—	—				

\* Diurnal mean.

The above abstract of observations has been drawn up for me by the Rev. Father DECHEVRENS, S.J. At his suggestion, English measures have been adopted, so as to render these returns more easily comparable with those from other ports.



The summer was unusually mild, and no night was sufficiently hot to prevent sleep in an ordinarily well-ventilated apartment. To this must be attributed the absence of affections depending upon excessive heat, and the low death rate. Small-pox was prevalent among the shipping as late as the month of May, and cases occurred from time to time throughout the entire year. The number of cases reached its maximum in April. In May a lady and six children arrived from Hongkong, bringing whooping-cough with them.

All the children were affected, but one—a boy 5 years old—especially so. In addition to the ordinary symptoms, he presented others of extreme gravity. He expectorated blood and blood-stained purulent matter in large quantity, the discharge being extremely fetid, and during one night reaching the amount of 20 drachms by measurement. The night temperature varied between  $102^{\circ}$  and  $104^{\circ}$ , and sweating was so profuse that the child's clothes had to be changed sometimes as often as three times. Food and medicine were alike vomited, but by administering concentrated nourishment and cod-liver oil (which, fortunately, he liked) immediately after every paroxysm of cough, a certain amount was retained, and wasting, though pronounced, was not so rapid as might have been expected. There was a patch of induration about 2 inches square at the base of the right lung, and largely dilated tubes there and throughout the entire lower lobe. No morbid change could be detected anywhere else. Recovery was complete after a tedious convalescence.

These children had cousins in Shanghai, who, contrary to advice, visited them once. All the cousins took the disease, but as they were carefully isolated it did not spread for some weeks. Finally, however, it became epidemic.

One well-marked case occurred in a male adult, in which the history of infection was clear. The catarrh, paroxysmal cough, and vomiting left no doubt as to the nature of the affection, although its extreme rarity after childhood made me at first incredulous.

Several cases of measles were observed, but the disease did not become epidemic. It will be noticed that in one instance death occurred in an adult, in whom, according to the certificate, the affection was of the hæmorrhagic or "malignant" variety.

Measles in Shanghai does not conform to the English type. In several cases among foreign children which fell under my observation, the eruption was precocious or tardy in appearance (second to seventh day of the fever), frequently presenting itself on the wrists and chest before coming out on the forehead, fugitive in character, vanishing once and sometimes twice for 24 hours at a time, and then reappearing, lasting occasionally as far as the tenth day (twelfth to seventeenth day of the catarrh), and generally followed by branny desquamation. In other respects there is little or no difference to be remarked. The fever is perhaps somewhat higher at night than is observed in uncomplicated English cases. In one instance where there was nothing to note in the condition of the lungs, I found a temperature of  $104.5$  at 11 P.M. This was on the third day of the fever, and immediately after the disappearance of a rash which had mottled the trunk and forearms during the afternoon. The rash was abundant on the face next morning, and the temperature had fallen to  $101^{\circ}$ . It is possible that in some of these cases an intercurrent access of malarial fever disturbs the regular evolution of the symptoms.

The multiform modifications imposed by acute or chronic malarial saturation on the natural course of specific diseases deserve careful study, as also do various independent typhoidal conditions hitherto undescribed, which occasionally end in death, and which are in all probability manifestations of acute malarial poisoning. To include them the application of the term "malaria" may require to be widened so as to include the vehicles of poisons other than that or those productive of the group of affections now classed as malarial. There can be

little doubt that we are already within sight of a new and scientific general pathology whose foundations will have been laid in those investigations into the history of blood parasites and of aerial and soil germs which are being ardently pursued all over the world, and in China notably by MANSON of Amoy. Those investigations will doubtless bring to light the causes of such cases as I refer to below, in which a non-traumatic septicæmia of unknown origin was accompanied by the gastro-enteritis described by BERGMANN as existing in artificial septic poisoning. Hitherto I have observed these typhoidal conditions only in young male adults newly or lately arrived, but I have heard of other instances which prove that neither sex, nor age, nor duration of residence is a necessary factor.

Two cases have recently been under my care, one of which I saw shortly before death, while the other I had an opportunity of watching from the beginning. The symptoms were those of profound blood-poisoning:—depression; rapid exhaustion; variable but never high temperature; profuse sweating; yellow staining of the skin; night delirium (sometimes tranquil, at other times wild); transudation of altered blood through all the mucous membranes except that of the mouth; profuse stools, discharged without pain or straining, and consisting of broken-down blood without any tendency to coagulation, but containing here and there a small black or crimson clot; scanty bloody urine, laden with urates, expelled with difficulty; persistent vomiting, occasionally tinged with blood; epistaxis; and frequent expectoration of blood-stained mucus, without, however, any true hæmoptysis. In neither of these cases was there distension of the abdomen or gurgling or pain in the cæcal region. In neither was there any exanthem until, in one case three, and in the other two, days before death, when a mottling of petechiæ resembling the typhus rather than the typhoid rash appeared on the abdomen. There were no sordes on the mouth, nor was there swelling of the gums. In neither were there any chest symptoms other than those of congestion of the lungs. In neither was there any sensible enlargement of the liver, and in one only was there a slight increase, to the extent of about an inch below the costal border, of the splenic dulness. These cases were treated with hot cataplasms to the abdomen kept on night and day, and internally, quinine, ergot, wine, lemon and orange juice, and occasional small doses of salines, with concentrated nourishment, but in neither did any benefit result from the treatment adopted.

Two deaths from cholera are reported, but there was no epidemic of cholera or of choleraic affections, although, as usual at the approach and during the continuance of hot weather, a large mortality among native residents was announced. The cause of this yearly recurring mortality is only vaguely described, but the symptoms enumerated point to excessive consumption of more or less unripe or decayed fruit and vegetables, exposure to the direct rays of the sun, and the absorption of malarious and other poisonous exhalations from the soil, which are condensed in the dark, filthy, crowded and unventilated ground floor rooms in which multitudes of Chinese habitually sleep.\* One of the fatal cases of cholera occurred in my practice.

\* When one considers the miscellaneous but always filthy food consumed by pigs in China, and the large extent to which pork enters into the diet of natives; when we consider also the fact that not only ordinary cooking, but smoking, pickling, and even saturation with chloride of zinc solution are inoperative to destroy the larvæ of *Trichina spiralis* when encapsuled in muscle, it is not unreasonable to suppose that many of the cases of rapid death, with symptoms of collapse following on pain of a rheumatismal character, and accompanied by sweating, ascites, diarrhoea and vomiting, which are every summer reported as occurring among the natives, are due to trichinosis. A case of this kind was brought into the Gutzlaff Hospital last August, and died a few hours after admission. By no amount of persuasion could I prevail on the relatives to allow me to take a specimen of the muscles, and therefore the diagnosis must rest doubtful. Two other members of the patient's family had died a few days before with the same symptoms, which had extended in one case over three weeks and in the other over four. The man brought to hospital was reported to have been ailing for about a month, and his illness, it was said, began with violent pain and swelling of the abdomen.

The patient, who had, as far as I could ascertain, been previously healthy, suddenly complained, while sitting at his desk, of slight malaise. He rose, but immediately fell in a condition of deep collapse. I saw him 20 minutes later. He was then conscious, bathed in perspiration, and quite cold. His tongue was cold, lips and nails blue, and the temperature in the rectum was below 95° (the lower limit of graduation on the thermometer I used). There had been one paroxysm of vomiting before my arrival, but neither then nor subsequently was there any purging. The vomit consisted chiefly of food eaten a few hours before. The pulse was insensible, and it was with difficulty that the contractions of the heart could be perceived with the stethoscope. They were regular at 110 per minute. Urine was totally suppressed. An hour later, under appropriate treatment, the pulse had become perceptible, but the temperature did not rise. Death occurred six hours after the onset of the disease. I was told subsequently that the patient had been away from home during the greater part of the previous night, but as nobody knew where he had been, it was impossible to trace the history of his attack. There was no postmortem.

BURIAL RETURN of FOREIGNERS for the Half-year ended 30th September 1880.\*

CAUSE OF DEATH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	TOTAL.
Small-pox .....	1†	2	...	...	...	...	3
Measles.....	...	...	...	1†	...	...	1
Pernicious fever.....	...	...	...	...	1	...	1
Cholera .....	...	...	...	...	...	2	2
Dysentery.....	...	...	...	...	...	1 f 1	2
Erysipelas.....	...	...	1†	...	...	...	1
Septicæmia .....	...	...	...	1	...	...	1
Phthisis pulmonalis.....	...	1†	1 1†	...	1†	1	5
"Phthisis of lung and kidney" .....	...	...	...	...	1	...	1
Pneumonia.....	...	...	1†	f 1	...	...	2
Capillary bronchitis .....	...	...	...	1‡	...	...	1
Disease of heart.....	...	...	2	...	...	...	2
Apoplexy .....	1	...	...	...	...	...	1
Gastritis.....	...	...	...	...	...	f 1§	1
Cirrhosis of liver .....	...	...	1	...	...	...	1
Infantile cholera .....	...	...	...	...	...	f 1	1
Albuminuria .....	...	f 1	...	...	...	...	1
Bright's disease.....	...	...	1	...	...	...	1
Cirrhosis of kidney .....	...	...	...	1†	...	...	1
Abscess .....	1‡	...	...	...	...	...	1
Drowned.....	...	...	...	3†	1†	1†	5
Murdered.....	...	...	...	1	...	...	1
Suicide .....	...	...	...	...	1	...	1
Uncertified.....	...	1	...	...	...	...	1
TOTAL.....	3	5	8	9	5	8	38

\* Not including deaths among the Catholic religious bodies.

† Not resident.

‡ Infants 1 year old.

§ Infant 17 months old.

|| Infant 6 months old.

In addition to the above, 2 infants were stillborn. If we strike out 7 deaths from accidental causes, there remain 31 ascribed to disease. Of these, 4 occurred among infants, and of the 27 remaining, 8 were furnished by non-residents. The mortality among adult foreign residents is thus reduced to 19 for the half-year—16 males and 3 females,—as against 23 males and 3 females during the same period of 1879. But as our interest is chiefly with the exotic white population, these figures are to be still further reduced in order to represent the mortality among white persons born in European countries, including of course the United States of America.

## MORTALITY among ASIATIC and other NON-EUROPEAN FOREIGNERS.

Apoplexy . . . . .	native of Macao.	Pneumonia (female) . . . . .	native of India.
Albuminuria (female) . . . . .	„ „	Small-pox . . . . .	„ Manila.
Disease of heart . . . . .	„ Peru.	Cirrhosis of liver . . . . .	„ „
Phthisis . . . . .	„ India.	Uncertified . . . . .	„ „

Eight cases in all. The mortality among the imported white adult resident population was therefore 11,—10 males and 1 female.

CAUSES of DEATH from DISEASE among RESIDENT EUROPEAN ADULTS,  
April to September 1880.

Small-pox . . . . .	1	Septicæmia . . . . .	1
Pernicious fever . . . . .	1	Phthisis . . . . .	2
Cholera . . . . .	2	Disease of the heart . . . . .	1
Dysentery . . . . .	2 (1 female)	Bright's disease . . . . .	1

CAUSES of DEATH from DISEASE among the CHILDREN of RESIDENT EUROPEANS,  
April to September 1880.

Abscess . . . . .	1
Capillary bronchitis . . . . .	1
Infantile cholera . . . . .	1 (female)

One female infant (parents natives of Macao) died of gastritis during the same period.

CAUSES of DEATH from DISEASE among NON-RESIDENT EUROPEAN ADULTS,  
April to September 1880.

Small-pox . . . . .	1	Erysipelas . . . . .	1
Phthisis . . . . .	3	Cirrhosis of kidney . . . . .	1
Pneumonia . . . . .	1	Measles . . . . .	1

The case of septicæmia was one of peculiar interest. With Dr. PICHON'S permission, I take his account of it from his recently issued *Report on the Medical Branch of the French Municipal Service for the year 1880*:—

Mr. CHARRIER was called on the 3rd January 1880 to visit a cow standing in a shed on the French Concession, and which had reached the last stage of typhus. While he was examining its mouth the animal coughed violently, spattering his face with a fetid discharge. A portion of this matter entered his mouth, and the stench which it emitted provoked during some 10 minutes uncontrollable attempts at vomiting. Returning home, Mr. CHARRIER washed his mouth with brandy, hoping thus to escape danger. But it was too late, the poison had already entered his system. Next day sharp pain attacked his mouth and head, which soon became so severe that, attributing it to dental neuralgia, he had the two posterior upper molars on the right side extracted. Instead of obtaining relief from this operation, he found all the symptoms gaining in intensity, and at length on the 17th he sought my advice.

By this time, 14 days after inoculation, the disease had made considerable progress. The right cheek was much swollen, the saliva was thick and stringy, and the breath fetid. As these symptoms are common to all forms of stomatitis, I might have attributed them to mere dental disturbance, were it not that the interior of the mouth revealed a condition of things of far from usual gravity. On the right side,

the anterior pillar, the gums, and the outer border of the tongue, where it came into contact with the teeth, were covered with scattered ulcers in various stages of development. Some presented a bright red border with a greyish white centre. Over others a white exudation had spread, which entirely concealed them. Others, again, were completely gangrenous. In spite of all this, the glands were but little affected, and there were no general symptoms.

I proceeded to cauterise the parts with a mixture of fuming hydrochloric acid and honey; but the application was only partial, as the swelling hardly permitted the patient to separate his jaws. I ordered chlorate of potash in large doses, and for local use "coal-tar saponiné" with carbolised washes. In some days there was evident improvement, the spots reached by the acid became clean, and lost their greyish hue, and I was hoping that the lesions had been arrested in their progress, when they manifested themselves afresh, especially on the left side, and with greater intensity, as though they were the result of a new infection. Every symptom became aggravated, while the breath remained indescribably fetid. Salivation was so abundant that the patient could not lie down, but was forced to remain in a sitting posture all night, lest the saliva should suffocate him. He complained of severe pain, which seemed to have its seat in the interior of the maxilla. The true gangrenous stage now set in. The greyish patches sloughed, and the sloughs separated very slowly, leaving behind stationary ulcers, which, instead of healing, developed a white false membrane so closely adherent by its attached surface that it seemed to occupy the entire thickness of the mucous membrane. When destroyed by hydrochloric acid, it reappeared next day. In two months the disease advanced by successive outbursts, penetrating each time more deeply into the tissues. The areolar membrane of the walls of the mouth was next attacked. An indurated nodule would form in the substance of the cheek, would invade the mucous membrane, and, becoming attached to it, would impart a scirrhus hardness to it. For about three weeks no active pathological change would occur in these indurated regions, but then mortification seized the patches, and, advancing from within outwards, cast off day by day sphacelated pieces, producing a cadaveric odour and a putrid and bloody discharge. Under these infective conditions, fever soon lighted up, and those general symptoms were manifested which betray profound blood change. The pulse was small, frequent and irregular, the skin was dry, but the temperature was not excessive. From time to time there were attacks of profuse and fetid diarrhoea. The patient's exhaustion was increased by nightly recurring attacks of facial neuralgia, which deprived him of sleep. So painful had become the muscular movements needed for speech that writing took the place of speaking, and the act of swallowing caused so much suffering that nourishment could only be administered in very small quantities.

To combat this profoundly adynamic condition, I ordered wine and quinine under every imaginable form, while I gave carbolic acid internally, with a view to neutralise the evil effects of the decomposing fluids which reached the stomach.

At length the advance of the mortification was arrested, and the ulcers healed; but the extensive loss of substance now produced grave trouble. The teeth were left bare, the periosteum was exposed at various points of the alveolar borders, while superficial necroses gave rise to suppuration, which maintained the mouth in an extremely fetid condition. The folds of mucous membrane corresponding to the angles of the jaw were replaced by scar tissue, which fixed the lower jaw almost immovably, and every attempt to separate the jaws produced unbearable agony. Mr. CHARRIER left hospital early in April. The mouth affection was cured, but his extreme weakness, and the smallness and frequency of his pulse, testified to the poisonous action exerted on his entire system by the absorption of putrid substances. For some weeks there was obvious improvement in the general condition, strength increased notwithstanding the difficulties which in consequence of the anchylosis of the jaw lay in the way of suitable nourishment; but the patient, who was not very obedient, soon deviated from his instructions, and anæmia reappeared, with all the train of symptoms indicative of hectic fever. He lived miserably for two months longer, and died on the 18th July.

The following conclusions flow from the history just related :—

The salivary secretion of a cow suffering from contagious typhus produced, by its direct action on the buccal mucous membrane of a human subject, a specific disease marked by a specially gangrenous tendency.

This secretion therefore contained a virus endowed with the power of originating the pathological process described.

The affection did not declare itself by ataxo-dynamic symptoms following quickly on the development of the local lesion—thus contrasting with malignant pustule.

The patient was not killed by the malignancy of the local lesion, but by septic poisoning due to long continued ingestion of hurtful substances.

Were I to seek a place for this disease in the common classification of inflammatory affections of the mouth, I should couple it with diphtheritic stomatitis. With this it has a greater number of characters in common than with any other ; but it is separated from it by its greater malignancy, inasmuch as it invades not only the entire thickness of the mucous membrane, but also the areolar tissue of the mouth walls.

Dr. PICHON relates this case in connexion with an account of the epizootic among horned cattle which, appearing in November 1879, prevailed for several months in the settlements :—

In the reports submitted by Mr. CHARRIER, in his capacity of Inspector of Markets, the commencement of the epizootic was traced back to the 7th November 1879. The first case that he had under observation was a heifer imported from France. The scourge spread rapidly through the sheds on the French Concession, whence it invaded the English Settlement, proving disastrous at the "Farm," where 122 head of cattle were lost within a few weeks.

I take the opportunity of enforcing the recommendations with regard to the boiling of milk which have often been offered in these Reports by quoting the remarks with which Dr. PICHON closes his account of the epizootic of 1879-80 :—

Most authors are silent as to the quality of the milk yielded by cattle during the prevalence of epizootics. It is possible that experience has not as yet supplied sufficient ground for its condemnation, and it is true that while a diminution of milk secretion is usually an early symptom in almost all diseases of the cow, complete suppression of that secretion accompanies any aggravation or prolongation of disease. The source of danger is thus removed by the operation of natural causes, and the discussion is narrowed to the question whether milk secreted at the very onset may not have acquired hurtful properties. In this state of uncertainty, which has not been cleared up by any authority on hygiene, the precaution of boiling the milk should be adopted. Boiling destroys any infective germs that it may contain.

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For the following interesting case, I am indebted to Dr. L. VINCENT, of the French navy, médecin-major of the *Champlain*. Although the facts reported occurred during the winter half-year, they may fitly find a place here :—

*Gunshot Wound of the Trachea; Cure.*—On the 10th November 1880, a detachment of sailors from the corvette *Champlain* was engaged in rifle practice at the range on the Hongkew Settlement at Shanghai, when the certificated marksman, P., one of the markers posted in the mantlets, was struck by a ball, and immediately fell. His companion having signalled the accident, firing was stopped, and the officer in command, along with Dr. GANIVET, assistant-surgeon in charge of the party, hastened to the spot. They found P. lying in a state of unconsciousness, with a wound, measuring about 1 centimètre in extent, situated in the middle line of the neck in front. Dr. GANIVET, before making a careful examination of the wound,

endeavoured to restore the patient's consciousness, in which he was quickly successful. P. showed by signs that he experienced great difficulty in breathing, and while doing so he was seized with a violent paroxysm of cough, during which he expelled a flattened piece of a Chassepot bullet, accompanied by a considerable quantity of blood. The fragment, which was of irregular shape, measured about 1 centimètre in length by 3 or 4 millimètres in thickness, and had reached the marker by rebound from the target.

Having rapidly cleansed the wound, through which air was freely passing, the assistant-surgeon applied a temporary dressing, placed the patient in a carriage, and removed him to his ship with every possible precaution and without accident. A minute examination was now made under favourable circumstances, and it was found that the lesion was situated transversely almost immediately below the cricoid cartilage. The edges were almost as clean-cut as though the wound had been made with a sharp instrument, but they were smeared with earth and sand which had clung to the projectile. A probe passed easily through the wound into the trachea, and by this exploration I assured myself that no foreign body was present, and that the posterior wall of the trachea was uninjured. The tube had been opened on its anterior aspect, and in the interval between the first and second rings, but only to the extent of the skin wound. At each expiration a hissing sound, audible at a considerable distance, was produced by air escaping through the wound, and for a certain extent all round the latter the subcutaneous areolar tissue was emphysematous. Voice was preserved, but it was much subdued and markedly changed in quality.

In the fear of increasing the emphysema, it was resolved not to stitch the wound, but merely to draw its edges together with the greatest care by means of strips of adhesive plaster. These were covered with a thick layer of cotton wool, intended to exert slight pressure and to limit the extension of the emphysema. The entire dressing was maintained in position by a bandage. During the examination and dressing the patient coughed up a certain quantity of pure blood. There was, however, no bleeding from the wound, as none of the vessels of the neck had been injured by the ball. Breathing was distinct over the entire chest, but the respiratory murmur was somewhat feeble at the bases, where also there was slight dulness on percussion. Dyspnœa was intense, respirations 36 per minute; the pulse was small, compressible, and beating 60 per minute. The patient was ordered cold broth, acidulated lemonade, and 20 drops of solution of perchloride of iron (Baumé, 30°). He was kept lying on his back with his head raised, and he was directed to keep absolute silence and to avoid all movement. The poor fellow had always been extremely quiet and obedient, and this contributed materially to his rapid recovery.

He passed a good night, continuing, however, to spit blood. The pulse, without rising in frequency, increased in volume. Next day (11th November), on examining the dressing without disturbing the strapping, the emphysema was found stationary, dyspnœa had decreased, but deglutition was difficult and painful. Expectoration still blood-stained, but no longer consisting of pure blood. Pulse 64; respirations 20; temperature 37.2 (99° F.). Cotton and bandage were reapplied. Medicine and nourishment as before. 35 grammes of castor oil. By the 14th November the expectoration had lost all trace of blood and consisted of mucus. Dyspnœa had greatly diminished, and auscultation revealed only a few sibilant râles on the right side. Cough had been troublesome during the night, and some difficulty in swallowing remained. The emphysema had completely disappeared. The edges of the wound were not inflamed, and union was already in part accomplished. Air, however, still passed through the diminished opening. The dressing was reapplied, and tapioca with wine and water and a mucilaginous syrup ordered. On the 19th November, cough and expectoration had ceased, the general condition was excellent, and though there was still some difficulty in swallowing, this symptom had much diminished, so that certain articles of food passed without serious difficulty. The wound was nearly closed, and was airtight. A few exuberant granulations were cauterised.

Cicatrisation was complete on the 23rd November, 13 days after the accident. The patient's voice had then recovered all its volume, and was changed neither in strength nor in quality. A very slight difficulty in swallowing remained, but this had disappeared a week later, when P. resumed duty, perfectly cured.

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*Lucas*

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II.—SPECIAL SERIES.

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- No. 1.**—NATIVE OPIUM :..... Published, 1864.  
„ **2.**—MEDICAL REPORTS :..... First Issue, 1871.  
„ **3.**—SILK :..... Published, 1881.
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