CHINA.

IMPERIAL MARITIME CUSTOMS.

II.—SPECIAL SERIES: No. 2.

MEDICAL REPORTS,

FOR THE HALF-YEAR ENDED 30TH SEPTEMBER 1883.

26th Issue.

PUBLISHED BY ORDER OF

The Inspector General of Customs.

SHANGHAI:
STATISTICAL DEPARTMENT
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National Oceanic and Atmospheric Administration

Environmental Data Rescue Program

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INSPECTOR GENERAL'S CIRCULAR No. 19 OF 1870.

INSPECTORATE GENERAL OF CUSTOMS,

PEKING, 31*st 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 { Season. / Alteration in local conditions—such as drainage, etc. / Alteration in climatic conditions. }

e.—Peculiar diseases; especially leprosy.

f.—Epidemics { Absence or presence. / Causes. / Course and treatment. / Fatality. }

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.

4.— * * * * *

I am, etc.,

(Signed) ROBERT HART,
I. G.

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

SHANGHAI, *26th December 1883.*

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:—

Report on the Health of Shanghai, pp. 1–24;

Report on the Health of Pakhoi, pp. 35–38;

Report on the Health of Foochow, pp. 39–43;

Report on the Health of Ichang, pp. 44–48;

Report on the Health of Amoy, p. 49;

Report on the Health of Wênchow, pp. 64–72;

Report on the Health of Ningpo, p. 73; each of these referring to the half-year ended 30th September 1883.

Report on the Health of Kiukiang, pp. 25–30;

Report on the Health of Chefoo, pp. 31–33; each of these referring to the year ended 30th September 1883.

Special articles on—

The Fevers of Chefoo, p. 34.

The Operative Treatment of Hepatitis and Hepatic Abscess, pp. 50–63.

An Appendix giving a translation of a contribution to the history of Syphilis, pp. 74–76.

I have the honour to be,

SIR,

Your obedient Servant,

R. ALEX. JAMIESON.

THE INSPECTOR GENERAL OF CUSTOMS,

PEKING.

The Contributors to this Volume are:—

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Dr. ALEXANDER JAMIESON'S Report on the Health of Shanghai for the Half-year ended 30th September 1883.

ABSTRACT of METEOROLOGICAL OBSERVATIONS taken at the Observatory of the Jesuit Mission at Zikawei, for the Six Months ended 30th September 1883. Latitude, 31° 14′ 41″ N. (Shanghai), 31° 12′ 30″ N. (Zikawei). Longitude E. of Greenwich, 121° 28′ 55″ (Shanghai), 121° 26′ 44″ (Zikawei).

DATE.	Barometer at 32° F.	THERMOMETER. Diurnal Mean Temperature in Shade.	THERMOMETER. Extreme Temperature in Shade.	Elastic Force of Vapour estimated in Inches of Mercury.	Humidity, 0–100.	Ozone, 0–21.	Velocity of Wind per Hour.	Mean Direction of Wind.	Total Evaporation during Month.	Total Rainfall during Month.	REMARKS.
1883.	*Inch.*	° *F.*	° *F.*	*Inch.*			*Miles.*		*Inch.*	*Inch.*	
April ... Max...	30.351 (15)	71.8 (27)	83.8 (27)	...	88 (28)	21	26.5 (12)				
Mean	29.980	58.1	...	0.368	74	14	8.7	S. 83° E.	3.056	3.797	Sixteen days rain. Thunderstorms on 4th, 14th, 25th and 29th.
Min....	29.550 (5)	48.0 (15)	41.0 (16)	...	61 (13)	7	...				
Range	0.801	23.8	42.8	...	27	...	...				
May .... Max...	30.117 (6)	70.2 (8)	83.1 (8)	...	83 (31)	21	24.1 (7)				
Mean	29.881	64.1	...	0.432	72	15	7.9	S. 56° E.	2.863	6.837	Twenty days rain. Thunderstorms on 9th and 14th.
Min....	29.612 (31)	55.0 (3)	49.1 (5)	...	53 (26)	7	...				
Range	0.505	15.2	34.0	...	30	...	...				
June ... Max...	29.965 (14)	86.3 (20)	96.8 (19)	...	88 (16)	19	24.1 (11)				
Mean	29.814	76.9	...	0.717	78	12	6.7	S. 56° E.	4.147	4.840	Fifteen days rain. Thunderstorms on 19th, 20th, 21st, 22nd, 24th and 25th.
Min....	29.623 (1)	67.6 (1)	58.3 (2)	...	53 (6)	5	...				
Range	0.342	18.7	38.5	...	35	...	...				
July .... Max...	29.802 (26)	88.0 (15)	96.8 (15)	...	92 (7)	15	20.9 (25)				
Mean	29.679	83.3	...	0.914	80	8	6.8	S. 39° E.	4.129	4.903	Ten days rain. Thunderstorms on 1st, 3rd, 4th, 6th, 15th, 16th, 17th, 18th and 19th.
Min....	29.457 (18)	76.0 (7)	72.0 (4)	...	72 (1)	0	...				
Range	0.345	12.0	24.8	...	20	...	...				
August. Max...	29.983 (27)	84.0 (4)	93.4 (31)	...	94 (7)	15	44.1 (5)				
Mean	29.709	80.7	...	0.874	83	8	10.0	S. 85° E.	3.732	7.254	Nine days rain. Typhoons on the 5th and 24th. No thunderstorm.
Min....	29.322 (24)	73.2 (11)	69.1 (9)	...	76 (1)	0	...				
Range	0.661	10.8	24.3	...	18	...	...				
Sept. ... Max...	30.211 (24)	85.7 (3)	95.5 (7)	...	89 (10)	16	20.4 (15)				
Mean	29.906	76.1	...	0.650	73	9	6.2	N. 85° E.	4.114	2.551	Twelve days rain. Thunderstorms on 1st, 3rd and 4th. Magnetic storm on evening of the 16th.
Min. ..	29.602 (11)	67.8 (19)	57.0 (27)	...	57 (28)	2	...				
Range	0.609	17.9	38.5	...	32	...	...				

NOTE.—The figures in parentheses indicate the days on which the observations to which they are appended were made. Note that under the heading "Humidity" the maxima and minima registered are the diurnal mean maxima and minima; in other words, they correspond to the two days of the month whereon the humidity was respectively greatest and least during the 24 hours. So in the column headed "Diurnal Mean Temperature in Shade," the two days are indicated on which the mean temperature was respectively at its highest and lowest.

For the above table I am indebted to the kindness of the Rev. MARC DECHEVRENS, S.J., director of the Sicawei Observatory.

The past season was particularly trying. There was a sudden onset of great heat about the middle of June. At first storms were frequent, but towards the close of summer the sustained heat was hardly interrupted by any atmospheric disturbance. The effect of this upon ailing children and others slowly convalescing from malarial attacks would have been disastrous but for the possibility, of which many availed, of migrating to Chefoo or Japan. Heavy rain, by keeping the air and ground saturated with moisture while the temperature was continuously high, added seriously to both danger and discomfort. Within the settlements, in consequence of night radiation from the dense masses of houses, the difference between the day and night temperature was but slight. Hence exhaustion through want of sleep, from which almost everyone was a sufferer.

The relation of atmospheric conditions to epidemic disease is obscure. GLAISHER* observed during the cholera epidemics of 1832, 1849, and 1854 that in London and its neighbourhood

> The reading of the barometer was remarkably high, and the atmosphere thick . . . . . a stillness of air amounting almost to calm accompanied the progress of the disease on each occasion. In places near the river the night temperatures were high with small diurnal range.

At Cairo, when cholera was at its height in 1865, Mr. BORG,† English Vice-Consul, noted that

> The sky was lead coloured, the atmosphere oppressive so as to render breathing rather difficult at times; and the town of Cairo, as seen from the Mokattan Hills, seemed to be enveloped in a spherical *cloud of thick mist during three consecutive days.*

So on the 23rd July 1883, when the epidemic reached its highest point in the Cairo district, Brigade-Surgeon McDOWELL‡ reported a "*very peculiar condition of the atmosphere*, a yellowness of the air, somewhat of the nature of a fog, and it was quite calm." Both in 1865 and in 1883 the sparrows deserted the place during the worst period of the epidemic.

Whatever such observations as these may be worth in other places, it is certain that in Shanghai no clearly defined relation can as yet be established between meteorological records and disease statistics. Last summer cholera made its first appearance in May, and was unusually prevalent among the native residents in the settlements, city and suburbs. Within the walled city the mortality was at its maximum at the beginning of the sixth moon (July), while the surrounding villages, I was told by Chinese, did not at this time suffer much. They, however, were very severely visited during the seventh and eighth moons. But all information of this kind derived from native sources is untrustworthy. So far as foreigners were concerned, the disease, as it always does, chiefly attacked the shipping population. The number of fatal cases of diarrhœa and dysentery was larger than in any half-year since 1874. Malarious fevers began to prevail in April, and although widely distributed were not fatal. Enteric fever was of benignant form, and in the only fatal case the disease was contracted away from Shanghai. An epidemic of whooping-cough occurred at the close of spring, and continued late into the summer. Cases of measles were, I believe, rare; I saw but three. In June diphtheria, or at

* Quoted by WATSON, *Principles and Practice of Physic*, 4th ed., ii, 532.

† Quoted by Surgeon-General HUNTER in an official report on the cholera in Egypt; see *British Medical Journal* 1883, ii, 598.

‡ *Ibid.*, 599.

least a fatal throat affection in children, was common in the native quarters. It was reported, too, that about this time a foreign child was attacked. No contagious disease of any kind occurred either among the children at the French refuge and girl's school, or in the Catholic boarding school for foreign boys. Small-pox did not disappear until July, but no death occurred from this disease among foreigners.

The following table is compiled from the sexton's books and from the English and French municipal registers of burials:—

BURIAL RETURN of FOREIGNERS for the Half-year ended 30th September 1883.*

CAUSE OF DEATH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	TOTAL.
Fever	...	*f* 1†‡	...	...	...	...	1
Remittent fever	...	...	...	...	...	1§	1
Malarious „	...	...	1‡	...	...	...	1
Enteric „	...	...	...	...	1§	...	1
Cholera	...	1§	1	1 9§	1 1† 4§	*f*1 4§	23
Marasmus	...	...	...	1§‡	...	...	1
Epilepsy	...	...	...	...	*f* 1	...	1
Apoplexy	...	1‖	...	...	...	1	2
Delirium tremens	...	...	...	*f* 1	...	...	1
Chronic alcoholism	...	...	1	1	...	...	2
Cerebral softening	...	...	1	...	...	...	1
Locomotor ataxy	...	...	...	1	...	...	1
Paralysis	...	...	...	...	1†	...	1
Cardiac hypertrophy	...	1§	...	...	...	...	1
„ valvular disease	...	1	*f* 1	...	1 1§	...	4
„ disease	...	1	...	...	1†	...	2
„ paralysis	..	...	1§	...	...	...	1
Phthisis	1§	2† 1§	1†	1 3§	1§	1§†	11
Diarrhœa	...	...	...	*f* 1	1§	1	3
Dysentery	...	...	...	...	1 1§	*f*1 1§	4
Peritonitis	...	1‡	...	...	...	...	1
Cancer of liver	1§	...	...	...	...	...	1
Bright's disease	...	1	...	...	...	...	1
Strangulated hernia	...	...	...	1§	...	...	1
Accidental poisoning	...	...	...	...	1	...	1
Fracture of skull	...	...	...	...	1§	...	1
Suicide	...	1¶	...	...	...	...	1
Drowned	1§	...	1§	1§	...	...	3
Uncertified	...	...	...	1§	...	*f* 2	3
TOTAL	3	12	8	22	18	13	76

* Not including deaths (if any) among the Catholic religious bodies, among Eurasians or Japanese; exclusive also of still-births.

† Natives of Manila (8). § Not resident (41). ¶ Bullet wound of head.
‡ Infants (4). ‖ Native of Macao (1).

One case, fatal in August, which was certified as "diarrhœa with collapse," I have included under the heading of cholera. It occurred on board a steamer advertised to leave with passengers within a few days. The ship's surgeon supplied the certificate.

Subtracting 1 case of suicide, 2 of accident and 3 of drowning, there remain 70 deaths attributable to disease. Of these, 4 occurred in infants. The foreign adult mortality was thus 66 (58 males and 8 females), as against 28 (23 males and 5 females) in the corresponding period of 1882.

The larger adult mortality in this return is chiefly due to the increased figures under the heads of cholera and phthisis (23 and 11, as against 11 and 4 respectively). The diminished number of infantile

deaths (4, as against 11) is noteworthy. A full analysis of the figures is given in the following tabular statements:—

CAUSES of DEATH from DISEASE among RESIDENT EUROPEAN ADULTS.

Cholera	4 (1 female).	Locomotor ataxy	1
Epilepsy	1 (female).	Cardiac diseases	4 (1 female).
Apoplexy	1	Phthisis	1
Delirium tremens	1 (female).	Diarrhœa and dysentery	4 (2 females).
Chronic alcoholism	2	Bright's disease	1
Cerebral softening	1	Uncertified	2 (females).

15 males and 8 females, as against 8 males and 2 females during the corresponding period of last year.

CAUSES of DEATH from DISEASE among NON-RESIDENT EUROPEAN ADULTS.

Remittent fever	1	Diarrhœa and dysentery	3
Enteric fever	1	Cancer of liver	1
Cholera	18	Strangulated hernia	1
Cardiac diseases	3	Uncertified	1
Phthisis	6		

35 males, as against 11 males and 2 females during the corresponding period of last year.

CAUSES of DEATH from DISEASE among EUROPEAN INFANTS.

Malarious fever	1	Peritonitis	1
Marasmus	1		

3 males (1 non-resident), as against 1 male and 3 females during the corresponding period of last year.

CAUSES of DEATH from DISEASE among NON-EUROPEAN ADULT FOREIGNERS.

Cholera	1 (native of Manila).	Cardiac disease	1 (native of Manila).
Paralysis	1 („ „).	*Phthisis*	4 („ „).
Apoplexy	1 („ Macao).		

8 males (1 non-resident), as against 4 males and 1 female during the corresponding period of last year.

CAUSE of DEATH from DISEASE in NON-EUROPEAN FOREIGN INFANT.

Fever . . . . . 1 (female, Manila)

as against 3 males and 4 females during the corresponding period of last year.

A cursory glance at these tables is first arrested by the large mortality from cholera, amounting to 23 cases, among whom 3 were resident European males, 1 was a resident European female, 1 a resident Malay, and 18 were non-resident males, of whom the great majority came from the shipping. Several cases were rapidly and almost suddenly fatal.

The form of cholera observed this year among Chinese in the settlements was extremely virulent, death in two or three hours being by no means uncommon. Nor is this matter for surprise when the extremely insanitary condition of many of the native quarters is taken into consideration. A voyage of discovery through the back slums, and even through sections removed in some instances by only a few yards from the main thoroughfares, reveals a state of affairs amply sufficient to explain the swift and extensive spread of any epidemic disease when once introduced. Houses built on or below road levels; inefficient or merely nominal cleansing of side streets and alleys; imperfect drainage; accumulations of filth on private

premises; lack of ventilation; lack of any system of house disinfection by lime-washing or otherwise throughout quarters swarming with a population of incredibly filthy habits; impure or insufficient water supply*; overcrowding; absence of any control over the disposal of the sick and dead; lack of supervision of shops where diseased meat and putrid vegetables and fruit are freely sold; rapid disappearance of all open spaces.† To the question of cholera I will return later.

Next will be observed the large number of deaths (11) from phthisis. Of these, 4 occurred among Malays, 6 among non-resident Europeans, while 1 only was contributed by the resident European population. Of the 6 deaths among non-resident Europeans, 3 occurred within four days in the ship's company of one steamer belonging to a well-known line. This fact suggests extraordinary carelessness in selecting officers and crew to man vessels on board of which a goodly number of passengers risk their lives and underwriters their money. It is suggestive, too, of deficient air space, and neglect of hygienic precautions in the men's quarters.

I have already noted the fact that the number of fatal cases of diarrhœa and dysentery was larger than in any half-year since 1874, and that in the only fatal case of enteric fever the disease was not contracted here.

An attempt has been made to provide more, if not better, accommodation for small-pox cases at the General Hospital. The governors of the latter institution have acknowledged, through their chairman, in a letter to the Municipal Council dated the 6th October 1883, that the existing wards have two serious defects. "In the first place they are too small to accommodate the patients during the time of an epidemic, and in the second place their construction is such that isolation is absolutely impossible." In face of the fact that some change of a radical character can no longer be postponed, the managing body has come to the surprising and disappointing conclusion "that the most satisfactory plan would be to reconstruct the wards on the present site, taking in a certain amount of ground at present occupied by shops." It is hoped that by this means sufficient ward space will be secured, and that a kitchen and various other departments can be included in the building, so that the small-pox hospital will be independent of the General Hospital, and the one building isolated from the other "if not completely, at all events much more satisfactorily than at present . . . . It is proposed to erect in connexion with these wards a disinfecting chamber of the most improved construction." Application for aid has been made to the Municipal Councils, and the matter will no doubt be brought forward for discussion at the next meeting of ratepayers.‡

The proposal, therefore, is to erect a small-pox hospital in one of the most crowded neighbourhoods of Shanghai, without any surrounding vacant land, and in immediate proximity to the General Hospital, the two institutions being, with certain undescribed precautions, served by the same nursing community. As thus stated it condemns itself, and inasmuch as the large Customs staff at this port, whose members are constantly thrown by their duties

* The water drunk by the inhabitants of Damietta before the 1883 outbreak was officially described as putrid, saturated with products of decomposition from innumerable carcases of animals which had died of typhus.

† This is pretty much the same condition of things as is represented as existing in those quarters of Calcutta where cholera flourishes most luxuriantly. See reference in *British Medical Journal*, 1883, ii, 175, to the Calcutta health officer's report on this year's cholera.

‡ Already (December 1883) the governors' plan, so far as regards locality, is being temporarily carried out by the conversion of the upper floor of a row of native houses adjoining the present wards into a room capable of sheltering in a sort of way, and with no diminished danger to the occupants of the general wards, some four or five small-pox cases. It is reported that the new room is intended to accommodate no less than 10 patients.

into exceptionally close contact with sources of contagion, may at any moment furnish an important contingent of small-pox patients who must be treated in hospital, the surgeons *to the Customs are in a special manner interested in conveying reliable information to the* public, who will have to pay either in purse or in health according as suitable or unsuitable accommodation is provided for patients suffering from contagious diseases.

Questions connected with hospital construction are the order of the day all over the civilised world. The Report of the Royal Commission on Small-pox and Fever Hospitals in London (August 1882) is explicit upon the danger arising from the establishment of small-pox hospitals in crowded localities:—

> That by some means or other the asylum hospitals in their present shape cause an increase of small-pox in their neighbourhoods appears to us clearly established by the experience of the five hospitals during the last 10 years, ... we feel that so long as it is not proved that "personal communication" is adequate to the explanation of the whole spread of small-pox, and so long as distant "atmospheric dissemination" is not shown to be in the highest degree improbable, so long it is essential that in the construction and management of small-pox hospitals, both sources of danger should be with the utmost care guarded against.*

First, as to local isolation. The sites occupied by the best arranged hospitals for infectious diseases in England afford more than 2,000 square feet per patient.† With respect to actual ward space, the new London Port Sanitary Hospital for cases of infectious disease discovered on board homeward-bound vessels provides 2,000 cubic feet of air per bed, and 144 square feet of floor. At the moment when in Shanghai we are asked to establish for 20 years (the proposed lease is for that period), in a district already densely populated, a small-pox hospital which shall abut on the north side upon a crowded street daily used as an open-air market, on the east upon the General Hospital—intended for the reception of cases of accident and ordinary disease,—on the west upon a thoroughfare, and on the south upon a narrow courtyard, the town of *Nottingham is finding a space of five acres too small for the effective isolation of a maximum* of 80 patients.‡ If it be said that wherever there are Chinese there will be small-pox, and that therefore local isolation would be an unnecessary and extravagant refinement in Shanghai, still regard should be had to the right of the patients in the wards to some chance of recovery. Nothing can be better established than that the aggregation of small-pox patients within buildings occupying a small area is in the highest degree hurtful to the patients themselves. But apart from this, the contention that the Chinese in any given neighbourhood have already so much small-pox that adding to it does not matter, requires only to be stated in order to be refuted.

The problem cannot be either creditably or intelligently solved in the way proposed by the governors of the General Hospital. The provision of a hospital for contagious diseases is a municipal concern, and, having regard to the systematic overcrowding of the settlements, the need for such an institution will year by year become more and more pressing. The duty of the municipalities appears clear. It is to acquire a piece of ground sufficiently large to ensure that at no future time will the buildings to be erected on it be in dangerous proximity *to surrounding dwellings. A plot of six or eight mow is the least required.* Plans should

* *Report*, pp. xvi, xxvi. In this view Sir W. JENNER, Sir W. GULL, Sir J. RISDON BENNETT, and Mr. SIMON concur.

† GALTON in *British Medical Journal*, 1883, ii, 423.

‡ SEATON at Epidemiological Society, 6th December 1882.

be constructed for the erection of pavilions to radiate from the central point of this plot, so that gradual construction may in the end produce a hospital built in accordance with a previously elaborated design. Several objections to this proposal may be anticipated. In the first place it will cost a considerable sum to acquire the land needed. There is but one answer to this, namely, that the isolation of a hospital for contagious diseases is worth paying for. Then, again, it may be said that there is too much land demanded. But if safety to the community is to be secured at all, there must be a large open space between the buildings occupied by patients ill with contagious disorders and neighbouring dwellings.* Thirdly, it will be objected that a building constructed for small-pox patients would be unoccupied for half the year, and would fall into decay during the intervals of occupation, or that, on the other hand, fruitless expense would be incurred to maintain a caretaker and hospital assistants during the intervals. A sufficient answer to this objection lies ready to hand. Hardly would the wards have been disinfected, after the discharge of the last small-pox patient, before they would be in requisition for cases of cholera; while the latter might be expected to cease about the time when small-pox would be recommencing.

Secondly, as to isolation of the staff and patients. There is a vague impression that if there be "as little intercourse as possible" between the inside and outside of a small-pox hospital, all that is essential is secured. From this point of view nothing can be more instructive than the recent experience of Nottingham, to which I have just alluded. Although the hospital there is built on a five-acre lot enclosed within a wooden fence 6 feet high, contagion has been found to spread from it simply because when the wards are full it is impossible to exercise sufficient supervision over the patients to prevent occasional and surreptitious communication between them and their friends over the wooden fence. With the comparatively small number of cases likely to be at any one time sheltered within such a small-pox hospital as I contemplate, a difficulty of this kind would not be experienced. Nor, probably, would it be experienced even in so unsuitable a hospital as the governors of the General Hospital recommend, were the patients drawn from the intelligent classes. But when the stupidity, unreasonableness and intractability of the class among which small-pox patients are mostly found in Shanghai are considered; when, further, the surroundings of the proposed wards are borne in mind, surreptitious intercourse between convalescent but still dangerous patients and their friends outside becomes a certainty. And, finally, so long as there is only a measure of isolation of the nursing staff from the nursing staff of the General Hospital, the occurrence of infection arising within the General Hospital itself is only a question of time. Thus, during the epidemic of 1875–77 in Liverpool, several patients sent into a certain hospital with scarlet fever acquired small-pox, although the small-pox wards were "as far as possible isolated."† It is not,

* There is no question that, whether the poison of cholera is or is not susceptible of being air-borne, the poison of small-pox is more readily disseminated through the air, from a distance, than is that of cholera. Whatever precautions as to isolation have proved necessary or advisable in the case of cholera hospitals are therefore still more indispensable in the case of small-pox hospitals. Now the Cholera Hospitals (Ireland) Act, 1883, § 3, ordains that no site for the erection of cholera hospitals shall be taken which shall be within 200 yards of any building where any trade or mercantile operation is being carried on.

† The Paris Hospital Commission of 1864 was unanimous in deciding that isolation worthy of the name is impossible without a special hospital. How carefully precautions against the spread of infection are observed in at least some French hospitals may be judged from the fact that the small-pox wards are strewn each morning with wet carbolised sawdust before being swept, and the sweepings are then burned in the presence of the *chef de service*. In spite of all sorts of precautions, there were four cases of small-pox acquired early this year in the wards of Saint-Antoine, and of these cases three were fatal. In March, in Professor PETER'S service at La Pitié, six cases arose.

however, necessary to seek outside instances in order to establish the proposition. There has already been sufficient proof of it in the past experience of the Shanghai General Hospital itself.*

Practically a separate staff for a perfectly isolated hospital for contagious diseases would be a matter of but little difficulty. At first small-pox and cholera need alone be thought of. All that would be necessary would be one European wardmaster and three or four selected natives, none better being to be found than those now employed in the small-pox division of the General Hospital. We are certainly within a measurable distance of a time when we shall have to deal with a formidable array of contagious diseases,† and cases of typhus may present themselves at any moment. It may also happen that one female or more may demand admission with a contagious disease. But for the present no extensive preparations need be made in view of such incidents. A couple of wooden huts kept in readiness for an emergency would meet the most serious part of any difficulty that might thus arise.

By far the most important event, from a sanitary point of view, which occurred during the six months was the completion of the works undertaken by the Shanghai Waterworks Company, and the supply of good water to the settlements and Bubbling Well Road. Construction began at the filling and pumping station at Yangtze-pu in October 1881. Pipelaying had commenced in Hongkew two months earlier, and was finished in February 1882. In the English settlement the work went on from the latter month to the end of the following April, when it was interrupted. It was resumed in October and finished in January of this year. Pipes were laid in the French settlement during the three months July, August and September 1882, and on the Bubbling Well Road from February to April 1883. Water was obtainable at the hydrants and in houses in July.

No careful analysis of the water supplied has yet been made, but, roughly tested with solutions of nitrate of silver and of permanganate of potash, I have on several occasions found it, as compared with samples drawn from the river opposite my house and filtered through one of the so-called magnetic filters, singularly free from chlorides and organic substances held in solution. Slight opalescence which is occasionally observed in specimens drawn from the pipes and main reservoirs appears to be due to the presence of a silicate (magnesia?) in fine division, derived probably from the filtering beds under varying conditions of pressure. It is, however, undoubtedly necessary to boil the pipe water before drinking it. The household supply of boiled and filtered water should, moreover, be renewed daily. Even distilled water when exposed to the air rapidly becomes charged with nitrites and organic matter; and it is curious that water filtered through animal charcoal is found to be sooner infested by proto-organisms than is water not so treated. This may be explained by the fact that the minute quantity of phosphate of lime dissolved out of the filtering material is eminently favourable to the growth of low forms of life. I may note in this connexion that Professor FRANKLAND‡ asserts that filtration of water through spongy iron "is absolutely fatal to bacteria and their germs." If we suppose bacteria to be the cause of all communicable diseases, and if further experience confirms FRANKLAND'S dictum, the household use of spongy iron filters will do away with the necessity for boiling drinking water, whereby the abominably

* Further correspondence between the Municipal Council and the hospital governors has since been published (*North-China Daily News*, 21st November 1883). In this nothing is brought to light which affects the discussion.

† Customs *Medical Reports*, ix, 13; xxiv, 43.

‡ Quoted by Dr. QUINLAN in the *Medical Press and Circular* (BRAITHWAITE'S *Retrospect*, 1883, i, 108).

stale and flat taste of water so prepared need no longer be matter for complaint. The *Sanitary Record* of 15th October 1883 describes the "filtre rapide" of Mr. P. A. MAIGNEN, Great Tower Street, London, as one whose "deodorising and purifying powers are probably in excess of any other in existence." From among several tests to which it has been subjected I select one, which is as convincing as a hundred.

A solution of 60 grains of sulphate of iron and 60 grains of acetate of lead in one gallon of water, to which 30 grains of urine had been added, yielded after filtration no trace of either iron, lead, chlorine, ammonia or urea. The filtrate became slightly turbid with chloride of barium (sulphuric acid).

A hardly less important event in the sanitary history of the place was the publication by Mr. H. E. HALL of the results of his investigations into the condition of the horned cattle in native dairies and slaughter-houses. While the published official reports represented the cattle in these places as free from disease, the following was the true state of the case as ascertained by Mr. HALL:—

Sickness amongst the dairy cattle began about the beginning of August. At Sicawei a milkman lost three cows and two buffaloes. Next it appeared amongst the stock of a man on the French Sicawei Road; then it appeared in Hongkew, where two milkmen lost two beasts each. Around the Ningpo Joss-house it has appeared pretty bad, one man losing four buffaloes, another two, and another one European bull and two buffaloes. Milk buffaloes have been lost by the dairies over at the Sinza side; a dairy on Carter's Road lost two foreign cows. Then the disease passed out to Wongdoo, and there several animals died. . . . . There were, up till some time ago, eight knackers' shops regularly at work at Pah-sien-joh, and after the epidemic broke out this summer they were very busy, and often averaged 25 to 30 head per day; in fact, the business was so lucrative that four new places were started, and now there are 12 knackers' or grease shops and six butchers. Lots of cattle, from 7 to 15 head, came past the West Gate at a time, and not one but had several lots a day, while other cattle came from the Sinza side, and dead cattle from Soongkong and Pootung. Runners were employed to go round the country and buy up the sick cattle and bring them in.

In the course of a visit paid to cattle sheds in the French concession, Mr. HALL and the French Inspector of Markets

Found them to be in the most filthy condition, the places stinking most horribly, and the shed littered knee-deep in manure, and having plentiful traces of the dung of animals that had been diseased and suffering from gangrene of the intestines. There were sick animals in the place, one of them in a very bad state; and the men admitted that they had had others, but that they had sent them over to the knackers. They stated that they took in all kinds of animals, sick as well as sound. From a sanitary point of view, things were in an awful state, and sufficient to create an epidemic of sickness amongst the people living in the neighbourhood. . . . . We then proceeded over the bridge to inspect the filthy place called a slaughter-house, situated at the end of the bridge, and in it we found two beasts slaughtered for two of the leading butchers in the English Settlement. These two carcases were hanging there, with blood and filth on the floor beneath them, with maggots crawling about, and blow-flies buzzing about in numbers, while the stench from the neighbouring grease shop where they boil down was almost insufferable. From such places as this the butcher's meat for foreigners is supplied. . . . . On coming out on to the street we met a coolie carrying a sheep dressed for the butcher's shop. From its appearance it was stopped for examination; it looked yellow as a tallow candle, and Mr. Collomb on first seeing it thought it had died, but on examination we found it had been killed and bled. The liver was separated from the pluck, the lungs were black in patches with congestion, and the flesh of the carcase soft and flabby, quite unfit for human food. The coolie carrying

it said he was taking it to a shop in Smith's market, giving the name. . . . . Such was the state of matters we found in a little over an hour's time, and then we had been over very little of the ground.

I have been informed by knackers that they supplied butchers' shops with cow tongues, the price they received being 200 cash each; and also fillets of beef at 70 cash a catty. . . . . Any flesh the knackers may have that looks anything like clean and marketable they are always willing to sell to the butchers, and, as one knacker said to me, the butchers know from the price they pay that the flesh is *from unsound beasts; but if they liked to buy, that was their look out.*

Mr. HALL'S letter was published in the *North-China Daily News* of the 22nd September. The market inspecting staff on the English settlement has now been strengthened, and negotiations are in progress for the acquisition of land for slaughter-houses, where, no doubt, supervision will be exercised over the beasts whose flesh supplies foreign tables.

Towards the close of September a case occurred in my practice the symptoms presented by which could be explained only on the supposition of meat poisoning. There was in fact an obscure history of some slightly tainted meat having been ordered away from the patient's table a week or so before he fell ill, but whether he had eaten any of it was doubtful.

The patient, after three or four days of indefinite ailing, took to his bed in consequence of extreme weakness and bilious diarrhœa, which rapidly became colourless. He thought he had fever, as his tongue was dry and fissured, with reddish brown edge and black centre. I found him in a condition of semi-stupor; temperature, 97°; some dyspnœa, lips blue, and general surface bathed in perspiration. On the arms above the wrists, on the trunk in the axillary line, and on the legs were large ecchymotic patches. The pulse was extremely rapid and feeble, and some slight irregularity was perceptible. The heart sounds could with difficulty be perceived, and it was impossible to distinguish the first from the second. The patient being very fat, the liver could not be accurately mapped out; percussion, however, elicited pain at the lower costal border. The urine was scanty and highly albuminous. During the succeeding two days the symptoms gained in intensity. Although surrounded with hot bottles, the patient's state of collapse continued, diarrhœa was succeeded by discharge of bloody fluid with putrid odour from the bowels, the urine *became still more scanty, and solid on boiling. The gums were spongy and did not bleed* so much as exude a sanious fluid. Hypostatic congestion of the bases of the lungs, with prune juice, *ill-smelling expectoration was the next symptom; there was almost complete aphonia. Meanwhile sleep* was sound and undisturbed, and was completely distinct from the stupor of the waking state. Reaction set in after four days, and was gradually established. During this period the temperature reached 104°.5 on one occasion, and this was the highest reading.

The large mortality from cholera has already been noticed.

Six cases which I believe to have been cholera were seen by me this year. Of these, two were fatal, and in both of the latter the speedy disappearance (probably spontaneous, but attributed to simple household treatment) of the initial purging and vomiting prevented alarm until profound collapse had *set in. In neither case was there much suffering from cramps. Both patients were pulseless when seen,* and so continued in spite of subcutaneous injections of ether, along with hot packing, mustard externally, and other obvious devices for restoring the circulation.

This condition of profound, rapidly advancing and fatal collapse unaccompanied by rice-water evacuations, and not marked by violent cramps, was frequently encountered in Egypt during the late epidemic.* The course of events is suggestive of a superacute septicæmia.

* *British Medical Journal*, 1883, ii, 180, 392, *et pluries.*

The manner in which cholera links itself with other diseases, and the number of conditions which may produce, either separately or conjoined, all its symptoms, will probably in the long run throw light on its intimate nature, but for the present render all attempts vain to establish an invulnerable theory. It is well known that, according to individual predisposition, out of a party of men exposed to precisely the same external conditions, one will have ague, another remittent fever, another dysentery, and another cholera.* Further, the collapse of pernicious intermittents, with rapid death due to heart failure, is indistinguishable from that of cholera.† The same might be said with regard to the collapse of angina pectoris, that of VERNEUIL'S "pulmonary congestion of the ruptured," that of the final stage of blood poisoning in urinary cases, and that due to poisoning by the salts of chromium and other mineral irritants. Anuria as complete as that of cholera is found in the pernicious intermittents, and in the course of many of the eruptive fevers and capillary bronchitis when attacking young children.

As pathology is only physiology under a cloud, it is well to form as clear an idea as possible of the physiological processes whose perversion or exaggeration is capable of producing symptoms resembling those of cholera or perhaps identical with them. The vena portæ and its branches are sufficiently capacious to receive all or nearly all the blood in the body. Experimental section of the splanchnic nerves dilates the abdominal arteries, indefinitely increases the flow into the portal system of veins, and proportionally diminishes the supply to all other parts. But inhibition of the vaso-motor influence may be produced in a vast number of ways,—by purely mental causes, as, for instance, in the act of blushing; by stimulation of the cardiac depressor nerve; by intense pain‡; and, as probably in the case before us, by alterations in the composition of the blood through the action of substances introduced into the circulation or arising therein from natural or morbid changes, and exerting a selective influence on that principal vaso-motor centre in the medulla oblongata which is specially connected with the splanchnic nerves. I might amplify this list, but it is hardly necessary to do so. Various as the causes of vaso-motor disturbance are, the direct and indirect effects are not less so. The nervous dropsy of LAYCOCK § furnishes a remarkable example, which may be added to those that are more generally recognised. Stagnation in the portal vessels is, however, what more immediately interests us in this connexion. It is not only rapidly followed by transudation of serum, but by defective action of the heart, through the substance and cavities of which a much diminished quantity of blood flows. Meanwhile, as in cases of experimental section of the spinal cord in the upper cervical region, the general blood pressure falls through the emptying of so many vascular areas. The renal vessels, though sharing in the abdominal dilation, are more influenced by the diminished pressure, and the secretion of urine is in consequence arrested.‖

* FAYRER, *Climate and Fevers of India*, p. 76.

† *Ibid.*, p. 74; Customs *Medical Reports*, xvii, 26.

‡ MITCHELL, *Injuries of Nerves*, p. 138.

§ *Edinburgh Medical Journal*, 1866, March and April.

‖ Suppression of urine, cramps in the extremities, extinction of the voice, and excavation of the eyes are mentioned by HIPPOCRATES, or one of his immediate disciples (*Epidemics*, v, 10, 79), among the symptoms of the cholera of his day. GALEN (*Def. Med.* 266, *Medicus* 13), while characterising the vomiting and purging as "bilious" (χολώδης), lays stress on the cramps in the calf muscles. CELSUS (*Medicin.*, iv, 11) mentions the rice-water stools and vomiting ("bilis supra infraque erumpit . . . interdum alba"), cramps, and consuming thirst, but omits suppression of urine. PAULUS ÆGINETA, too, is silent as to this latter symptom, which had been mentioned by ARETÆUS, whose "cholera," by the way, is rather an excessively acute dysentery.

Such physiological considerations as these do not, it is true, carry us very far towards an explanation of the initial step in the disease process. For certain authors, among whom VERNEUIL may be cited, every virus is an organism, known or unknown. But a generalisation of this kind is more conducive to simplicity than to accuracy. It takes no account of the possibility of disease arising from the catalytic operation of unorganised ferments, which, although they are not reproduced as are organised ferments, are not used up by action, and are therefore capable of transforming an indefinite quantity of suitable material under suitable conditions. This property is the precise equivalent of unlimited cell multiplication. Bearing this in mind, we may follow to a certain distance the teaching of this school of pathologists. Thus, the presence of many "virus" is perfectly compatible with apparent health until some condition specially favourable to their development comes into operation, when they break out into fatal activity. The number and variety of the bodily tissues explain the innocuity of these poisons so long as the environment is indifferent or unfavourable. One will remain inoperative at the surface of the skin or mucous membranes, or within the vessels, which when carried into the connective tissue may display incredible activity. To quote VERNEUIL,

L'ablation, la traction d'un fil à suture, l'introduction d'un stylet explorateur, sont à elles seules capables, selon l'état de l'organisme, d'ouvrir la porte au virus, ou plutôt de le transvaser d'un milieu défavorable dans un milieu favorable à sa pullulation. Voici des vaisseaux sanguins pleins de microbes jusque-là inoffensifs, un léger tiraillement en rompt un, les microbes se répandent dans le tissu conjonctif interstitiel, c'est-à-dire dans un milieu propre à leur culture, ils y prolifèrent et tuent l'individu.*

Slightly changing the point of view, one might add to this such an example as that of malarious fever declaring itself at the beginning of the cold season, when the system, thrown out of balance by the change of weather, is favourable to the development of a poison wherewith it has been saturated during the heat and damp.† So also the common experience may be cited of the liability to abscess formation after hypodermic injections of morphia administered to pregnant or puerperal women, and the fact that during a fever abscess occasionally forms at the site of an old and forgotten injection.

Even if it be held necessary to believe in specific disease elements, there is no inherent improbability in the theories which assume the gradual or rapid formation of such elements, or the transformation of previously existing forms, within the animal economy. That is to say, in the absence of objective certainty, there is nothing unscientific in adopting a theory of local and successive elaboration of poisons producing the groups of symptoms which are labelled with the names of the contagious diseases. According to CREIGHTON,‡ who cites the authority of SYDENHAM and Sir THOMAS WATSON, the infectiveness of cholera, small-pox and yellow fever is a matter of development. This theory, either in the form just stated or in other forms allied to it, is applied to cholera by many persons to whose opinion experience in areas wherein cholera is of frequent occurrence lends great weight.§ It is universally admitted that in this way

* Association française pour l'Avancement des Sciences, Congrès de Rouen, 20th August 1883.

† FAYRER, *Climate and Fevers of India*, p. 76.

‡ *British Medical Journal*, 1883, ii, 218.

§ LEWIS, EWART, and FAYRER (Intercolonial Medical Congress at Amsterdam, 6th September 1883) deny that there is any proof either of the contagiousness or of the specific nature of cholera. But for recent Indian experience in regard to contagion, see *British Medical Journal*, 1883, ii, 727.

typhus fever, which, when it is once called into existence, becomes in the highest degree contagious and infectious, can be originated anew amid dirt, misery, and overcrowding. It is therefore by analogy not impossible that cholera should arise as a non-specific intoxication from, for example, the consumption of water charged with various organic poisons developed by the decomposition of animal carcases cast into rivers and other sources of supply, but propagating itself in a specific manner by means of the virulent secretions and excretions of the first sufferers. That typhoid which we know as specific may arise *de novo* with all its communicable qualities has been suggested by many otherwise inexplicable epidemics in Europe, upheld by great authorities, and proved by Indian experience.* How it does arise is another matter. COLIN attributes it to marsh miasm :—

> Il faut en effet attaquer l'arche sainte de la spécificité de la fièvre typhoïde . . . je ne conçois ici la fièvre typhoïde que comme transformation de l'appareil morbide d'une des manifestations de la malaria.†

A theory which very decisively cuts the knot of the difficulty, but for which the scientific world is certainly not as yet prepared, has been promulgated by M. BOUCHARDAT.‡ Treating of the tubercle bacillus (what is true of that being applicable to other bacilli), he asserts that it is formed within the vessels from lymphatic cells and other elements of the blood and lymph which have become dilapidated under conditions of "physiological misery." Without having recourse to this hypothesis, there is no lack of ready-made bacteria in the body, some of which, though presumably harmless, may be in a labile state. Not only are the fermentative changes which in normal digestion give rise to the formation of leucin, tyrosin and indol due to the presence of bacteria, but there is reason to believe that the blood and lymph normally contain these organisms. This has been demonstrated in the case of certain fish,§ and HOPPE-SEYLER‖ points out that from the earliest days of independent life the human digestive canal is pervaded by organised germs of all kinds. The digestive fluids are doubtless fatal to many of these, but certainly not to all.¶

Whatever be the origin of pathological organisms, we know that the nature of at least one of them, the bacillus anthracis, depends on its environment, and although this is the only one that has been transformed, it must be remembered that it is also the only one which beyond all question is linked to a specific disease in the relation of cause to effect. Every surgeon is familiar with the fact that bacteria are to be found in abundance in the serous discharge from operation wounds under antiseptic dressings, but we may suppose that their environment is unfavourable, for at all events they do no harm.

It is not necessary, therefore, to postulate the existence of virus, coming from without and altogether foreign to the normal economy, in order to explain the phenomena of contagious disease. And this should influence us when giving a name to the hypothetical cause, apart from surrounding conditions, of cholera. Many substances that we know to be operative in starting such or such physiological or pathological processes are matters of faith and not of sight. No one has seen pepsin or ptyalin at any time, yet we rightly speak of them as of things actually

* FAYRER, *Climate and Fevers of India*, p. 177.
† COLIN, *Traité des Fièvres intermittentes*, pp. 281, 284.
‡ Académie de Médecine, 4th September 1883.
§ RICHET, Société de Biologie, 21st July 1883.
‖ Quoted in VIRCHOW'S *Archiv*, 1883, iii, 178.
¶ *Ibid.*, 183.

existing. But these words are really no more than algebraic expressions for "the cause, whatever it may be, of peptic (or pancreatic) digestion." So there could be no objection to the use of the notation *cholera germ* as an abbreviation for "the unknown cause which under certain external conditions produces the groups of symptoms designated by the term cholera." But in fact it means a great deal more than this, and implies an elaborate theory.

However all this may be, the virus of cholera whether organised or unorganised has hitherto evaded the most prolonged and painstaking search. Diligent exploration of the tissues and fluids of cholera patients has revealed a score or so of lowly forms of life associated with the disease, but one after another these have been found to be in no wise peculiar to it.* The German commission of inquiry into the Egyptian epidemic of this year announce that all their autopsies but one brought to light special micro-organisms, resembling those found associated with glanders, but, except for their presence in perfectly fresh bodies, indistinguishable from the bacilli of putrefaction. These organisms were discovered chiefly within the tubular glands and villi of the lower part of the small intestine, occasionally penetrating the deeper layers of the mucous membrane, and causing submucous hæmorrhage. They are incapable of communicating cholera to the lower animals, when introduced either through the stomach or by inoculation, and KOCH, the president of the commission, does not see satisfactory ground for considering them to be the cause of the disease. It is reported also that the results of the French commission are not more positive.

The large number of conditions which clinically may give rise to the essential symptoms of cholera, and the complexity of the mechanism by which these symptoms are produced, render the pathogeny of the disease extremely obscure. It is easy to say that a germ or anything else we please is the cause of cholera. But it is quite another thing to explain how the cause acts. A man swallows sulphuric acid, carbonises the upper part of his air passages and dies of suffocation. Without going into minutiæ, nothing can be simpler. But a man swallows an overdose of strychnia, and dies. It is not very obvious why he dies, for to cause his death the most elaborate mechanism in the universe is disturbed in a manner as to which experimental physiologists are by no means agreed. And so, between the introduction of the cholera germ, if germ there be, and the beginning of the train of symptoms which ends in death, there is a vast unexplored labyrinth of events. It is the secret of life over again, a mystery like that which hangs about the course taken by respired oxygen from the moment when it is brought into contact with the molecules of the tissues to the moment when it emerges in combination with carbon as carbonic acid.

Various modes of treatment have been recommended of late years.† Dr. LOWNDS,‡ formerly of Bombay, revives notice of a plan, adopted by him in 1860, of treatment by raw meat soup made somewhat in this fashion:—

Chop fine 8 ounces of recently killed meat. Infuse in 18 ounces of pure water, adding 13 drops of dilute hydrochloric acid (B.P.) and 40 grains of common salt. Stir frequently; strain. Add 8 ounces

* A nearly complete list of these organisms will be found in the *Progrès Médical*, 1883, 634. See also DE LANESSAN, *Traité de Zoologie*, "Protozoaires," pp. 174, 177.

† For a summary to date, see Customs *Medical Reports*, xiv, 44.

‡ *Lancet*, 1883, ii, 123.

of water. A wineglassful to be given every half-hour, beginning when the mixture has been made about 10 minutes.

He reports almost invariable success. M. BURQ, well-known for his researches in métallothérapie, has long advocated the use of copper in cholera and typhoid fever. His plan was tried on a large scale in Paris in 1867, with a resulting mortality of 100 per cent.,* and recently† a formal denial was given to his pretensions. Boracic acid internally,‡ chloroform internally,§ chloral hypodermically,‖ injection of distilled water, emulsionised fat, saline or albuminous fluids or defibrinated blood into the veins, bladder, peritoneal cavity or subcutaneous areolar tissue; sulphuric ether hypodermically,¶ pilocarpine, paracotoine,** Worcestershire sauce, bromide of potassium, and many other drugs administered in various ways have been extolled, and seem, indeed, to have produced most gratifying effects in the hands of those who have first tried them, while they have failed dismally with everybody else. The subcutaneous injection of sulphuric ether in collapse I adopted in 1877, 1878, 1882, and again this year, but all the cases in which I did adopt it proved fatal. Encouraged by instances in Dr. PICHON'S practice where what no doubt was in reality choleriform pernicious intermittent yielded to quinine administered hypodermically, I gave quinine in this way with a free hand in both the cases which proved fatal in my own practice this year. For my own part, I have never seen the pulse return permanently when once it has disappeared at the wrist, but I believe others have been more fortunate. The intravenous injection of saline fluids and of blood in its natural condition or defibrinated seems of late to have fallen into disrepute. I know of nothing more disappointing than the almost invariable return of all the symptoms after the immediate effect of a warm saline injection has passed by. How saline fluids act when administered in this way is obscure; the action, whatever it may be, is, however, certainly complicated. The quantity of saline substance introduced is not sufficient to promote any notable degree of endosmosis from the bowel. The heart obtains a larger quantity of fluid to contract upon, and the flagging circulation is thus momentarily hastened, but the largest share of the effect is probably due to reflex stimulation of the vaso-motor filaments distributed to the mesenteric vessels.

In face of the failure of all methods of treatment, the only profitable direction which efforts to check cholera can take is that of prevention. Although the preceding discussion is barren of any positive conclusion, all that appears from it being that there is as yet no proof that the cause of the disease is external to the human body, a negative of this kind when properly applied has its practical use. The doctrine of an ultra-microscopic contagium acting mediately or immediately, besides being unproved, has the disadvantage of directing attention mainly to the necessarily futile perfectioning of means for keeping out the dangerous but intangible intruder. This doctrine is the foundation of quarantine, and thus regarded the inefficiency of the device needs no explanation. Its advocates of course close their eyes to its failures or merely deny that they occur, but the question is one of history and statistics,

* Académie de Médecine, 23rd March 1880.
† Ibid., 21st August 1883.
‡ *Lancet*, 1878, ii, 257.
§ *Progrès Médical*, 1882, 61.
‖ *Ibid.*, 1,033 (quoted from *British Medical Journal*).
¶ *Ibid.*, 1881, Nos. 50–52; 1882, Nos. 1, 3, 4, 6.
** Customs *Medical Reports*, xviii, 22.

and receives from these no equivocal answer. Abandoning all theory, experience teaches that wherever those conditions are fulfilled which, since the dawn of civilisation, have been, at least in words, acknowledged as the most favourable in a general way to health, there cholera either takes no root or swiftly withers and dies.* Conversely, under those insanitary conditions which during years of freedom from epidemic disease are allowed to accumulate and become more and more aggravated, cholera at irregular intervals breaks out and spreads indefinitely. In individual cases personal predisposition or indifference has much to do with determining whether cholera, or indeed any other disease, shall be contracted. But each one should regard himself as liable, and do for his own protection what the community should do for all, for the considerations brought forward are equally applicable when limited to the conditions to which each individual is subjected. Whatever, either from the moral or from the physical side, depresses the general health is favourable to the ingress of cholera. Even the emotion of fear alone may be sufficiently intense to produce symptoms which usually precede and are continuous with those of cholera.

Whenever an epidemic breaks out special personal precautions are recommended by medical authorities all over the world. PASTEUR'S memorandum of advice to the members of the French cholera mission to Egypt† is the latest paper of this kind, and has been widely published and doubtless carefully read. Obviously it would be impracticable to carry out his suggestions, and, indeed, the whole paper bears evident marks of having been concocted in the laboratory, far from the exigencies of daily life amid a terrified population. The same reproach

* Wie können wir uns gegen die Krankheiten schützen, welche durch niedere Organismen erregt werden? Der wirksamste Schutz besteht offenbar in denjenigen Massregeln, welche darauf ausgehen, die Brutstätten niederer Organismen zu beschränken. Alle die Bestrebungen, welche dazu dienen, unseren Körper, unsere Wohnräume, den Untergrund unserer Häuser, die Luft und das Wasser rein zu halten, die Auswurfstoffe zu entfernen oder unschädlich zu machen, sind in dieser Beziehung von der grössten Wichtigkeit."—LIEBERMEISTER, *Ber. kl. Wochenschrift*, 1883, 627.

† Les précautions à prendre que j'ai indiquées aux membres de la mission française du choléra, sont toutes relatives au cas où il s'agit de lutter contre des causes de contagion portées au maximum. Ces précautions sont instituées, en outre, dans cette hypothèse, que je considère comme très probable, sinon certaine, que le choléra ne pénètre pas dans l'organisme humain par les voies respiratoires, mais uniquement par les voies digestives, à moins de circonstances tout exceptionnelles :—

1°. Ne point faire usage des eaux potables de la localité où se fixera la mission pour entreprendre ses recherches sans avoir fait préalablement bouillir ces eaux et les avoir agitées, une fois refroidies, pendant quelques minutes (deux ou trois minutes suffisent) dans une fiole ou bouteille à moitié remplie et bouchée.

On peut se servir des eaux de la localité à la condition de pouvoir les puiser à une source même dans des vases *flambés*, c'est-à-dire dans des vases qu'on aura exposés quelques instants dans de l'air chauffé à 150 degrés environ, ou, à plus forte raison, à une température plus élevée. On pourra faire usage avec avantage d'eaux minérales naturelles.

2°. Faire usage de vin qui aura été chauffé en bouteilles de 55 à 60 degrés et bu dans des verres également flambés.

3°. Ne faire usage que d'aliments très cuits ou de fruits naturels bien lavés avec de l'eau qui aura bouilli et qu'on aura conservée dans les vases mêmes où elle aura subi l'ébullition, ou qui aura été transvasée de ces vases dans d'autres vases *flambés*.

4°. Se servir de pain coupé en tranches minces portées au préalable à une température de 150 degrés environ, pendant 20 minutes au plus, après qu'il aura été coupé en tranches.

5°. Tous les vases employés aux usages alimentaires auront été portés à la température de 150 degrés ou davantage.

6°. Les draps de lit et les linges de toilette seront plongés dans l'eau très bouillante, puis séchés.

7°. *L'eau à l'usage des soins de propreté aura été portée à l'ébullition et additionnée après refroidissement, de* $\frac{1}{100}$ d'acide thymique (un litre d'eau alcoolisée pour 2 grammes d'acide) ou de $\frac{1}{50}$ (un litre d'eau pour 20 grammes) d'acide phénique.

8°. Pratiquer des lavages, plusieurs fois répétés par jour, des mains et de la figure avec de l'eau bouillie, additionnée *d'acide thymique dissous dans l'alcool ou d'acide phénique dissous dans l'eau.*

is not applicable to the recommendations made by M. DUJARDIN-BEAUMETZ's commission.* But, in fact, all reasonable precautions may be summed up as consisting in a careful but not timid observance of the ordinary rules of personal and domestic hygiene.

The public prophylactic measures in which the Customs was concerned last season were simple enough. In July the Taotai, moved by the Board of Consuls, sanctioned the declaration of "quarantine" against vessels arriving here direct from Swatow. The declaration remained in force until the 15th December. Such vessels were accordingly detained below the shipping until visited by the Customs medical officer appointed for the purpose. In all 18 steamers were thus detained, but in only three cases was it found necessary to prevent immediate access to the harbour. In one instance a native had died of cholera on board while coming up the river, in the second a native suffering from the disease was found on inspecting the crew, and in the third an officer had died on the voyage, two days after leaving Swatow. The system adopted was practically identical with that enforced in England. In the first of the two cases referred to the body was rolled in tarred canvas and covered in the coffin with chloride of lime before being landed for burial; in the second the patient was removed to St. Luke's Hospital; and in the third some articles which had been found in the man's cabin were subjected to disinfection on board before the vessel was allowed to come into the harbour. In each clothing and bedding were or had been destroyed, and sedulous care was taken to secure thorough disinfection of every part of the ship with which the patient could possibly have had anything to do. In a fourth case an officer had died between Swatow and Amoy, and was buried at Amoy. Here satisfactory precautions had already been taken by the master of the steamer.

When a foreigner ill with cholera is brought into the river there is no difficulty about removing him to hospital, where neither he nor his freinds oppose his being left until the termination of the case. It is presumed that in hospital due means are taken to prevent a freshly introduced case from becoming a danger to the community. But with Chinese it is different. A Chinaman from another province may object to go to hospital here, or to stay when he is carried thither, or, more probably, a band of natives of his province (who have perhaps never seen him or heard of him before) come, and with violence and uproar demand

9°. Ce ne serait que dans le cas où l'on aurait à manier des cadavres de cholériques ou des draps et linges souillés de leurs déjections qu'il y aurait lieu de se couvrir la bouche et les narines d'un petit masque formé de deux morceaux de toile métallique fine, comprenant entre leurs surfaces, de la ouate sous un épaisseur de 1 centimètre au plus, masque porté à 150 degrés seulement, en renouvelant la température de 150 degrés à chaque occasion nouvelle de grand contage.—Letter from PASTEUR published in the *Temps*, August 1883.

* Les personnes qui donnent des soins continus aux cholériques ou qui habitent avec eux, se soumettront aux règles suivantes :—Elles ne prendront aucun repas ni aucune boisson dans la chambre occupée par le malade. Elles devront aussi, avant chaque repas, se rincer avec soin la bouche et se laver les mains et les avant-bras avec une solution de borax à 2 %. Elles devront chaque jour se laver le visage, la tête et les mains, et tout le corps si cela est possible, avec de l'eau renfermant par litre 10 grammes de borax ou 1 gramme d'acide thymique.

Lorsque les déjections (matières fécales ou matières vomies) auront souillé des parties du vêtement, on devra laver immédiatement ces parties avec une solution renfermant 20 grammes de sulfate de cuivre par litre d'eau, et à défaut de solution désinfectante avec de l'eau bouillante. Si les parties ainsi souillées sont très étendues, on devra procéder à la désinfection totale des vêtements. Cette désinfection s'obtiendra en plaçant lesdits vêtements dans un local clos (armoire, cabinet d'aisances, etc.) où l'on brûlera 10 grammes de soufre concassé par mètre cube. Ces vêtements devront rester dans cette pièce pendant 24 heures.—Resolution adopted by the Conseil d'Hygiène et de Salubrité du département de la Seine, August 1883.

that he be given up.* This difficulty can be got over on future occasions by obtaining authorisation from the local magistrate to detain in hospital natives landed with cholera from ships. To this, I apprehend, there will be no official opposition. It is true that in any given year, before cholera is imported it is already somewhere present among the Chinese here; but an imported case might possibly be carried into a quarter not yet attacked, and become a fresh centre of infection.

The question of quarantine in its strict sense is already judged so far as the English people, and indeed the Americans too, are concerned. In Germany the doctrines of the Munich school are rapidly gaining ground; but upholders of the rigorous system have it nearly all their own way in France and Italy. During an animated discussion at the Académie de Médecine on the 24th July 1883, M. JULES GUÉRIN'S voice was the only one raised in defence of the conclusions long since reached in England and yet longer adopted in India, and the Academy by a formal vote repudiated M. GUÉRIN'S views, and unanimously accepted those of M. FAUVEL, *who is an ardent advocate of quarantine.*† *Apart from the general issue, I pointed out nine* years ago‡ that quarantine is an impossibility in Shanghai. Medical inspection is likely to prove useful, but there ought to be some suitable place provided on the Pootung shore for the disinfection of clothes and other things too valuable to be destroyed.

CASES ILLUSTRATING AN ECONOMICAL MODIFICATION OF LISTER'S DRESSING.

In 1876, about a year after LISTER'S method was perfected, all serious operations at the Gutzlaff Hospital, with which I was then connected, were, for about three months, performed under a douche of carbolic solution, and gauze dressings were subsequently applied. The

* This was what actually occurred in the case of the native (a Swatow man) who was removed to St. Luke's Hospital, as mentioned in the text. A curious instance of the desire to interfere with foreign treatment, not out of interest in the *patient* but *merely for the sake of interference*, occurred at the same hospital a few weeks ago. A boy severely injured by the fall of a scaffolding was brought in late at night. Next day it was decided in consultation that amputation of the left foot was necessary. The bones were crushed, a mass of skin and muscular tissue had been torn away, and all the soft parts remaining were completely disorganised. Before anything was said about the result of the consultation, inquiry was made for the boy's relatives, and we were assured that the nearest lived a day's journey off, on the Pootung side. Nobody had come to see him or inquire about him since the accident. But no sooner was it known that the foot was to be removed than two "uncles" turned up from a neighbouring tea house, and protested that no operation should be performed. They were shown the foot, which spoke for itself; they were assured that death sooner or later would be the result of allowing it to remain; their right to interfere on the score of relationship was disputed. But all to no purpose. They carried the child away, and he submitted without a murmur, although I am convinced that he had never seen them before.

† M. JULES GUÉRIN n'admet pas que le choléra, lorsqu'il éclate en Europe, y a toujours été importé de l'Inde et ne se propage que par voie de contagion . . . . . Pour lui la contagiosité du choléra ne constitue qu'un fait relatif, c'est-à-dire subordonné pour les localités, pour les individus et pour la maladie elle-même, à des conditions d'aptitude, de réceptivité et d'activité contingentes, lesquelles expliqueraient l'impuissance des transports lointains et la stérilité des contacts individuels. Pour lui, encore, les dénominations de choléra nostras, choléra sporadique, choléra asiatique, n'ont pas de raison d'être, de même qu'elles n'expriment que des degrés différents et des formes diverses d'une même affection. Enfin, il considère comme des institutions caduques et non justifiées les mesures sanitaires employées aujourd'hui pour s'opposer à l'envahissement du choléra asiatique.

. . . . . Plusieurs membres de l'Académie ont craint de voir la presse anglaise s'emparer des incidents de cette *séance et prétendre que l'Académie s'est montrée indifférente vis-à-vis des opinions professées par M. J. GUÉRIN*, ou du moins que les avis sont partagés à cet égard. En conséquence, ils ont demandé qu'il fût bien spécifié que la communication de M. FAUVEL a été unanimement applaudie et que l'Académie ne s'associait en aucune façon à la manière de voir de M. J. GUÉRIN. —Bulletin de la séance du 24 juillet 1883.

‡ Customs *Medical Reports*, vii, 39.

results were various, but were generally good, and were occasionally excellent. The great expense involved was, however, an obstacle, more especially as the dressings were changed far more frequently than has since been found necessary. The construction of the hospital enabling me to have always at my disposal one small but well-ventilated room, freshly white-washed (floor, walls and ceiling alike) and unoccupied, important operation cases were subsequently treated on the open-air plan in such rooms. The results continued reasonably good, but an amputation below the knee having turned out fatally, and a steam spray producer (the arrival of which had been unavoidably delayed "on account of the demand for the apparatus") having come to hand, strict Listerism was again adopted for a couple of months in the winter of 1877–78. The operations performed were few in number, and the results were all that could be desired; but again the question of cost intervened. Finally, an unfortunate case, in which an infant one of whose knee-joints I had opened for suppuration after a fall, died of hæmorrhage which was concealed by the dressings until too late, induced me to revert in native hospital practice to the old plan of open-air treatment with sedulous drainage. Thenceforward it was only in honour of visitors that the spray was employed and the Listerian method carried out in all its details.

The case just referred to was an interesting one. The child was a boy (native) aged $2\frac{1}{2}$ years. He accidentally fell from his nurse's arms, alighting, as it would seem, on the left knee. The joint swelled, became red and painful, and was treated by a Chinese doctor, who plunged a needle deep into it obliquely behind the outer hamstring, and then heated the free end of the needle over an opium lamp. Five days later, when the child was brought to the hospital, the general condition was but little affected, though the joint was tense with contained pus. The thigh muscles had not as yet begun to waste; the leg was œdematous, and no arterial pulsation could be discovered at the ankle. A puncture made under the hand spray with a hypodermic needle satisfied the parents that an operation was necessary, and the joint was accordingly laid open by an upper and lower incision, washed out with a 5 per cent. solution of pure phenol, and drained, the strictest Listerism being observed. A gutta-percha splint was applied behind the joint outside the dressing. Pulsation was perceptible in the posterior tibial immediately after the operation. The contents of the joint were thick, healthy pus and small black blood clots. All went well for 12 days, the parents insisting on carrying the child home after each visit to the hospital. The dressing was changed three times, no hæmorrhage occurring at the time of dressing, but the gauze on each occasion contained a drachm or so of blood. Carelessness on the part of the child's mother permitted the upper edge of the gauze to become continually stained by urine and fæces, so that it was impossible to be sure that discharge was not escaping. The changes of dressing were thus in fact unnecessarily frequent. At the fourth there was visible oozing, which compression of the femoral appeared to increase. Amputation was now advised, but was at once rejected. A piece of gauze was therefore pressed into the lower wound, from which the drainage tube had already been withdrawn, and the joint was put up as before. Meanwhile all inflammatory action had ceased and the skin about the knee was shrivelled. Two days later the gauze plug was removed and the hæmorrhage seemed at an end. On the following night, however, the child was found blanched, and blood oozing from the dressing. The chief native assistant was summoned from the hospital, but death had occurred before his arrival. The dressing was saturated with blood. Erosion of the popliteal vessels by surrounding pus could hardly have been started within so short a period as five days. It is therefore likely that the native practitioner punctured either the artery or vein, probably the latter.

Shortly afterwards I determined to try whether success could be obtained if the second and subsequent gauze dressings were replaced by masses of freshly carded oakum secured with

bandages drawn tightly, with as much force as possible, on the principle of the well-known pansement ouaté of M. ALPH. GUÉRIN, which rendered such remarkable service during the Commune.*

An amputation below the knee performed with full antiseptic precautions, and dressed in the orthodox manner, was redressed on the fourth day with oakum, again on the eighth day, and was soundly healed on the thirteenth day, no suppuration having occurred. A case of excision of the elbow, performed for me by Dr. BOONE and treated in the same way, was discharged well on the nineteenth day, cicatrisation having probably been complete on the fourteenth day, but the oakum having been last reapplied on the twelfth day, the exact date could not be ascertained.

Then came a Syme's amputation, which I dressed under the spray with oakum and macintosh immediately after the operation. But this fresh experiment was decidedly not a success. Free suppuration occurred, and although the final result was quite satisfactory, there was a good deal of waiting for it.

A second case in which gauze was not used at all was more encouraging:—

In this (seen with Dr. LOWRY of the Customs service) a middle-aged foreigner, the bearer of a *reducible ventral hernia situated on the left side at a point a little outside the edge of the rectus and on* a level with the anterior superior spine of the ilium, had received a violent blow on the protrusion a few days before. Much pain, swelling and constitutional disturbance, along with obstinate constipation, ensued. The patient was restless, and difficulty in effectually retaining gauze dressings on the abdomen was anticipated. Accordingly a large quantity of oakum was freshly carded, and, as an additional precaution, was exposed for about half an hour to a 2½ per cent. carbolic spray from a steam machine. A long oblique incision was then made over the tumour, and a considerable quantity of fetid pus and broken-down blood clot removed. The wound was irrigated with 5 per cent. solution until the fluid escaped absolutely clear, by which time the exposed tissues were puckered and somewhat whitened. The bowel, covered by a fascia-like layer, was felt at the bottom of the wound. A large drain was inserted at the lower angle, and five points of stout catgut suture were carried from side to side of the incision, emerging half an inch from its edge and traversing the fascia (including, I have no doubt, the peritoneum), covering the bowel, which latter was pushed back with the finger, while the structure covering it was raised with broad-bladed forceps. *The prepared oakum was then piled on the abdomen, covered with macintosh, over which was* laid another layer of oakum, while the whole was bandaged as tightly as possible with a broad roller extending from below the hips to the ensiform cartilage. On the third day this dressing was removed and replaced. Not a drop of pus had been formed. The oakum was damp over the wound, but it was impossible to make out the nature of the fluid which had exuded. There had been no fever or pain, and the bowels were readily moved by simple enemata. Dressing was removed every three or four days, the macintosh being omitted after the first change. Recovery was complete after three weeks, a deeply puckered scar remaining, which has since much smoothed out. The most gratifying circumstance connected with the case is that the hernia has disappeared, although no persuasion will induce the patient to wear a truss. He wears, however, a broad, strongly compressive bandage.

More recently, at St. Luke's Hospital an instructive case occurred:—

An incense dealer, aged 32, much exhausted by pain, sleeplessness and deficient food, was admitted under my care with osteomyelitis of the right humerus, radius and ulna. Disarticulation at the shoulder was performed with the usual antiseptic precautions. The dressing was removed on the fourth day, and the drainage tube shortened. On the eighth day the dressing was again changed, and the drainage tube *removed. The discharge was scanty, merely serous, and odourless. A cursory examination of two slides* from it revealed no formed elements, except red blood corpuscles. In consequence of the importance

* VERNEUIL, *Mémoires de Chirurgie*, ii, 197.

of the case no trial had been made of oakum. After midnight on the eighth day the patient was reported to be bleeding to death, and on my arrival at the hospital I found his bed full of blood, while blood was steadily oozing from beneath the gauze. The chief native assistant compressing the subclavian with a key, I rapidly removed the dressing, of course without waiting for spray, and, as far as I could, broke down with the handle of a scalpel carefully cleansed with carbolised water, the adhesions between the flaps. No bleeding point was visible when the subclavian was released. After waiting a reasonable time I douched and syringed the wound thoroughly, closed it with a loosely twisted rope of oakum drawn round the flaps, and completed the dressing with masses of oakum tightly bandaged. Hæmorrhage did not recur, and recovery was uninterrupted. There was a considerable discharge of odourless pus on the tenth day. On the eighteenth day the wound was closed, with the exception of a sinus leading seemingly to nowhere in particular, which for a month afterwards yielded two or three drops of yellowish serum when pressed.

The sinus doubtless led to a portion of the glenoid ligament, perhaps injured during the operation. After all particular attention to the patient had ceased, an abscess of which no complaint had been made burst an inch below the acromion, and discharged profusely for several days, until exit was given to a fibro-cartilaginous fragment, when its cavity closed. Obviously this would have occurred even had no change been made in the mode of dressing.

If it were legitimate to judge from so small a number of cases, one might infer that, provided no complication arises, the gauze dressing after operation may be left undisturbed for four days at least and be then replaced by freshly carded oakum, applied *in masses* and tightly bandaged. Further, that oakum cannot safely replace gauze for the first dressing. Parenthetically, I would mention that when the oakum is very tarry it is well to interpose a single ply of gauze wrung out of carbolic solution between it and the skin.

Evidence drawn from operations on large joints would, however, be more conclusive. If a perfectly good result is obtained in a series of cases of suppurative disease of the knee, it is fair to conclude that something beyond chance has been at work, and that the mode of dressing has been beyond reproach. By a perfectly good result I mean uninterrupted recovery, immediate arrest of the suppurative process, restoration of free motion to the joint to the extent of permitting voluntary and painless flexion of the leg on the thigh to an angle of at most 45°, and ability to walk without the slightest limp. I have recently had such a series, which, however, consisted of only three cases; but although the disease was in all confined to the synovial membrane, the gravity of the condition lends sufficient importance to even these few instances to justify tentative conclusions drawn from their histories. The three cases were admitted to St. Luke's Hospital under my care within 12 days.

Liu, male, story-teller, 34; admitted late on 16th August 1883. No history obtainable, as patient is in deeply typhoid condition; temperature 103°.5, sweating profusely. Right knee red, tense and fluctuating; patella standing out from bones; excessive pain on manipulation; leg flexed on thigh, which is wasted. Attempts to straighten the leg too painful to be persisted in. Ice applied; 20 grains quinine; brandy and milk freely. Delirious during night, sleepless, occasionally shivering; diarrhœa.

17th.—Temperature 102°. States that pain and swelling began 11 days ago without known cause, and have steadily increased ever since. Finds ice agreeable. Refuses operation. Towards night pain became more violent than ever; temperature 104°.5. Sleepless during night; delirious. Quinine had been repeated.

18th.—Temperature 101°. Knee looks as if on point of bursting. Patient now eager for relief. Joint opened under spray by two incisions on either side on level of and parallel to lateral borders of patella. Interior thoroughly explored with finger, and bones found normal. 37 ounces of healthy pus

evacuated. Long probe passed from incision on internal aspect to apex of reflexion of synovial membrane under cruræus. Incision at this point. Drain of large calibre drawn through, secured with silk freshly boiled in carbolised wax, and cut off accurately at skin surface. Irrigation of joint through drainage tube with carbolic solution until the fluid escaped perfectly colourless. Gauze dressing; moulded splint.

19th.—Good night; temperature normal; no pain; appetite returning.

23rd.—Under douche of 5 per cent. solution, dressing removed. A little blood on gauze. Gentle pressure gave issue to a small quantity of cloudy synovia. Irrigation as before with 3 per cent. solution. Drainage tube shortened. Oakum as above described.

29th.—Drainage tube removed, a few drops of blood escaping. Douche, irrigation, oakum as before.

5th September.—All incisions healed. No pain on pressure. Some thickening remains. Joint stiff. Passive motion.

12th.—Thickening almost disappeared. No limp when walking. Leg freely flexed on thigh.

18th.—Discharged well.

Chu, male, teacher, 35; strumous, crackling at both apices; admitted 27th August 1883. Inflammation of left knee, with rapid effusion, severe pain, and fever, began without assignable cause on 25th August. Temperature 101°.5. Knee slightly flexed. Patient resists all attempts to straighten it. Ice externally. Iodide of potassium, with quinine and cod-liver oil.

30th.—Fever increasing. Morning temperature 102°.8; evening, 103°.5. Occasional shivering fits; profuse sweating. Tongue dry; no appetite; sleepless. Typhoid condition established. Refuses operation.

2nd September.—All symptoms aggravated. Knee extremely tense. Thigh muscles wasted. Pain intolerable. Temperature 104° at night. Cannot keep any medicine down except laudanum, which is given freely. Diarrhœa.

3rd.—Anxious for operation. Under spray, long incision parallel to inner border of patella. Counter-opening through muscles on front of thigh. Smart bleeding from latter, easily controlled. About a pint of yellow serous fluid, showing abundant leucocytes (pus corpuscles) under microscope, was evacuated. Bony surfaces healthy. Drainage, irrigation, gauze dressing and splint, as in previous case. Temperature at night 99°.6, and no subsequent rise.

8th.—Dressing removed under douche, drain shortened. A little blood (from upper incision) on gauze. Clear, colourless fluid in small quantity on gentle pressure. Irrigation. Oakum.

12th.—Drain removed, synovial fluid in very small quantity escaping. Dressed with oakum as before.

19th.—Lower incision not yet perfectly closed. No discharge.

26th.—Slight thickening remains. Incisions firmly healed. Joint can be flexed freely.

27th.—Left hospital of his own accord. Able to walk a few steps without limping, but condition of chest, which has became much worse, unfits him for active exertion of any kind.

Tung, male, no occupation, 19, delicate overgrown lad; admitted 28th August 1883. For past five years both knee-joints have been more or less distended with fluid. There is such a sense of insecurity that patient can walk only when supporting himself on two sticks. Occasionally, when weather becomes cold and damp, severe pain is experienced. Has been treated on and off by Chinese doctors for last three years. Has used embrocations, and the moxa has been applied four times to each knee, and with great severity, as the scars it has left testify. A month ago needles were plunged deeply into the joints, and since then the swelling has largely increased, pain has become continuous, and walking unsupported is altogether impossible.

When the patient lies down both joints are seen to be filled, but not distended, with fluid, the patellæ being thrown forward in a marked manner. When supported in the standing posture, the patellæ resume almost completely their natural position, but tense, elongated, pyriform swellings make their

appearance on either side of each joint, the globular extremity downwards, and the other extremity apparently losing itself along the side of the femur.

Treatment: cod-liver oil, iodide of potassium and quinine. Iodine was painted on merely to keep up appearances, while the general condition was being improved.

4th September.—Aspiration under spray. 25 oz. of fluid withdrawn from right knee and 27 oz. from left. The feet and legs were bandaged, and tight compression with ammoniacum and mercury plaster spread on leather was applied from a point 4 inches below the knee to a like distance above it.

The fluid withdrawn coagulated loosely as it passed along the aspirator tube. It was brownish yellow, and dispersed through it were a few minute whitish flakes. Under the microscope a drop showed wavy bands of fibrin interlacing, and containing among their meshes leucocytes in considerable abundance, and masses of granular detritus. The point of the needle, carefully passed over the interior of the synovial membrane, was everywhere in contact with a velvety layer, not very vascular, for no blood followed the needle as it was withdrawn.

13th.—Both knees had filled again, and pain was severe. The left knee was therefore incised precisely as in the last case, drained, irrigated, dressed with gauze, and a splint applied. The right knee continued to increase in size until the 17th, when the effusion began to disappear, no treatment being applied to it.

20th.—Drain shortened. A little yellow serous fluid on pressure. Irrigation. Oakum.

25th.—The right knee is to-day perfectly free from fluid.

27th.—Drain removed, a few drops of blood following it. Oakum.

11th October.—Dressing removed. Wounds soundly healed evidently some days before. Leg can be flexed on thigh to an angle of less than 45°. No limp or unsteadiness when walking.

There is nothing new in using oakum as a dressing. The only attempt at innovation is its systematic use in masses tightly bandaged to replace the second and subsequent dressings after aseptic operations. This is obviously economical, and, as I have sought to show, sufficiently successful.

I must confess, however, that I have not ventured to test oakum in intra-abdominal surgery. In a case of laparotomy in a Portuguese woman, undertaken to ascertain the nature of an obscure tumour in the pelvis and abdomen, the peritoneum was found covered with disseminated cancer nodules, while a large mass probably involving or starting from the left ovary occupied the pelvis. The abdominal cavity was closed in the usual way and gauze dressing applied. This first dressing was removed on the eleventh day, when the wound was healed throughout its entire length without a trace of suppuration. Chromicised catgut had been used for both deep and superficial sutures. It was then proposed to apply oakum as the second dressing, but dread of the wound reopening and of oakum perhaps not proving sufficiently protective deterred me. Gauze was used, but this through accidental soiling had to be removed four days later. An ordinary bandage with salicylic wool replaced the gauze, merely for support, and the woman went home on the seventeenth day completely recovered from the operation.

The spontaneous disappearance of the long-standing fibrinous exudation into the right knee in the case of the boy TUNG is interesting as an illustration of reflex trophic influence. To this it may fairly be ascribed, seeing that after the failure of all sorts of rational treatment, extending over four or five years, resorption was contemporaneous with active processes of some kind set up in the opposite joint. Another instance of this reflected action in a symmetrically placed organ came lately under my notice.

A healthy Eurasian woman, aged 19, married, or at least under connubial conditions, was seen on the 21st October 1882. In each breast, symmetrically disposed on either side of the nipple, were two extremely hard, indolent tumours, freely movable under the skin. They had appeared, without known cause, about two months previously as minute knots. That placed externally in the right breast was now the size of a small mandarin orange, the others were not larger than walnuts. There was no "eczema" of the nipples, the patient was not and had never been pregnant, and had no uterine symptoms. There was no hardening or enlargement of the axillary glands. I was told that a friend of the patient had lately died of cancer of both breasts, and that this circumstance had much affected her. She was assured that her disease was not malignant, and was advised to wait. Meanwhile iodide of potassium was prescribed, and an ointment of belladonna and iodide of potassium ordered for external use.

2nd November.—There is but little alteration. The external tumour on right side is perhaps more stonily hard than before, and now much complaint is made of the weight and tension on this side.

It so happened that a single, but larger, tumour of apparently the same character in the right breast of a married woman of 25, suffering from endocervicitis with extensive erosion of the os, and retroversion, had shortly before spontaneously disappeared under treatment addressed to the uterine symptoms alone. I had been consulted about the tumour, and not being very clear about its nature, had advised delay. Inquiring as to the state of the uterine system, the condition just described came to light. It had completely yielded to treatment by the end of a month, and the uterus was in its normal position supported by a pessary. As the uterine symptoms abated, the breast tumour diminished, and shortly after they had disappeared no trace of the tumour remained beyond some shrivelling of the skin covering the gland.

However, in the present case I could discover no explanation of the large tumour in the right breast, outside the breast itself, nor could I give any readily intelligible excuse for further delay in removing it. I therefore consented to excise it, but refused to touch the left breast, as I hoped that the nodules in that might disappear when the tumour on the opposite side was removed. Just then I myself met with a severe accident, and it was not until the 3rd December that the operation was performed. The large tumour had by this time increased to the size of a coolie orange, and the other had also visibly grown, though not in an equal ratio. I operated antiseptically by GAILLARD THOMAS's method* for benign growths, which consists in lifting the lower half of the breast from the great pectoral, turning it skin downwards on the chest wall, and dissecting out the tumour or tumours from behind. I removed both tumours from the right breast, leaving two cavities, into which drainage tubes were inserted. The result was thoroughly satisfactory, the only traces of the operation finally left being diminished size of the breast, which will probably be merely temporary, and a faint red line, rapidly fading out and concealed by the gland itself, marking the track of the knife. The tumours were examples of the non-cystic adeno-fibroma of young women, which is little more than a simple local hypertrophy. The important point for my present purpose is that four weeks after the operation the tumours in the left breast had disappeared, and now (October 1883), 10 months later, both glands are absolutely healthy.

Similar cases are by no means rare, but the number as yet recorded is not so large as to render further instances superfluous.

* *London Medical Record*, 1882, 278.

Dr. G. R. Underwood's Report on the Health of Kiukiang for the Year ended 30th September 1883.

The health of the foreign residents at this port during the past 12 months compares favourably with that of the two years immediately preceding. Cases of illness have been fewer, and of these a smaller number have been seriously affected. The months from October to May are usually healthy here, as in other ports in Central China, and the weather is as a rule much more enjoyable than the same time of the year in England. Local conditions also with us tend to make the cool season the healthiest. The city wall and lanes afford pleasant walks the year round, and in addition to these we can in the winter months have exercise on the plain to the west of the concession, and the low hills adjoining. With the summer the river rises, and for months the country westward is covered with water, the ground of the settlement becomes damp, the stagnating pool at the back fills, and fevers, diarrhœa and other diseases crop up. Last year there were many cases of malarial fever—relatively to the population—of those who lived on the back street and near the pond already spoken of. This summer the water was not so high, and there were fewer sufferers from malaria.

The following are the diseases seen during the year in a foreign resident population of from 64 to 68:—

Intermittent fever (quotidian and tertian), 19.
Remittent fever, 1.
Typhoid fever, 1.
Simple continued fever, 2.
Stomatitis, 5.
Catarrhal sore throat, 5.
Gastric catarrh, 4.
Gastric colic, 1.
Atonic dyspepsia, 1.
Hepatic congestion, 1.
Diarrhœa, acute, 7; subacute, 3.
Dysentery, subacute, 1; chronic, 1.
Hæmorrhoids, 1.
Intestinal worms, 6.
Cardiac irritability, 1.
Aneurism of aorta, 1.
Abscess of nasal cavity, 1.
Bronchitis, acute, 2; chronic, 1.
Cerebral congestion, 1.
Neuralgia, 2.
Hysteria, 1.
Gout, 1.
Rheumatism, acute, 1; chronic, 1; lumbago, 1.
Anæmia, 1.
Genito-urinary disease, 4.
Eczema, 1; ecthyma, 5.
Tinea circinata, 2; urticaria, 1.
Conjunctivitis, acute catarrhal, 9; chronic, 3; phlyctenular, 3.
Polypus of auditory meatus, 1.
Fracture of radius, 1; sprain of ankle, 1.
Ulcers from mosquito bites, 2; mammary abscess, 1.

None of the patients who suffered from intermittent were severely ill, and all except one threw it off quickly under moderate doses of quinine. The exceptional case was of an irregular type, and the patient would have a recurrence of fever after three or four days freedom. It was finally got rid of by a trip down river.

The case of remittent proved also somewhat obstinate. Under the use of quinine, and afterwards of arsenic, the temperature fell to 99°.5, and remained at that level for two weeks in spite of all treat-

ment. The patient left for Shanghai, and after 24 hours on the river the temperature became natural, and the fever has not since returned.

The typhoid fever case ended fatally. The patient, who was a robust-looking and fairly healthy man of 34 years, and of sedentary habits, had on 12th July an attack of fever, with high temperature, headache and restlessness, and was believed to be suffering from remittent. There was a slight remission for a few hours on the fourth day, but after it had gone the temperature was 104°.6, and large doses of quinine made no impression whatever upon the disease. The patient was the subject of a peculiar idiosyncrasy as regards temperature, which made the case more obscure for the first week. Three years ago he went to Japan on account of a persistent attack of tertian fever. In Shanghai, on his return, and when feeling quite well, the temperature remained at 100° to 101°, without anything appreciable to account for it, and only in the course of months did it fall to the natural. At the beginning of the second week the disease resolved itself into unmistakable typhoid, with high temperature, morning 103°.8, and evening 104°.6; respirations 30; pulse 84; thirst and diarrhœa, with peasoup-coloured evacuations.

Towards the close of the second week the temperature ranged from—morning, 102°.2 to 102°.8, and evening, 103° to 103°.8. On the twenty-first day there was a remission, little pronounced however, *the morning temperature being 99°.4, and evening 101°.4. It again rose, and till the twenty-eighth day* varied from—morning, 100° to 102°, and evening, 102° to 103°.2. The thermometer on the twenty-eighth day registered in the morning, 98°.4, and evening, 101°.4. Next day it had risen almost to its previous level, and remained at this till the afternoon of the thirtieth, when the patient was threatened with peritonitis. From that day till the thirty-fourth it ran from—morning, 102° to 102°.6, and evening, 102°.8 to 103°.6.

The pulse at first was slow, and for the first three weeks did not go beyond 90, although with such a temperature a higher rate might have been expected. From the twenty-first day it began to rise very gradually, and from 102 on the evening of the twenty-ninth rose to 118 on the thirtieth. It con*tinued at 112 to 118 till the thirty-fourth day, when, perforation taking place, it bounded at once to* 150, four hours before the patient died.

The bowels began to get loose early in the second week, the stools watery and peasoup-looking, and it was only by careful attention that the movements were kept at from three to five in 24 hours. Traces of blood appeared in the dejecta on the sixteenth day, in the form of two or three dark-coloured clots, the largest a little bigger than a hazel nut. It continued to be seen up to the twenty-fifth day, never in larger quantity, and not in every stool. Lead and opium were used while it was present, to control the frequency of movement.

From the beginning the patient had not complained of pain or tenderness on pressure over any *part of the abdomen, which was full from the first. On the thirtieth day, however, when hæmorrhage had* ceased and I was hopeful that the worst was past, he had severe pain in the right iliac and lumbar regions, with increased pulse and temperature, indicating a limited peritonitis. It was relieved by fomentations and counter-irritation. At this time, too, the flatulent condition of the intestines became aggravated, and added much to the discomfort of the patient. Relief was obtained to a certain extent by turpentine fomentations, asafœtida and turpentine enemata, and the passage, per rectum, of a long tube. On the thirty-third day the tympanites was rather worse, and on the thirty-fourth severe pain all over the abdomen, with vomiting, at first of bilious fluid and afterwards of altered blood, set in; the pulse rose from 118 to 150, and the patient speedily fell into a state of collapse, and died in four hours.

Thirst was a constant symptom, and was little allayed by iced milk, barley water, rice water and chicken jelly—the sole dietary.

A slight eruption was noticed over the abdomen on the thirteenth day, one or two spots of which I believe to have been the characteristic typhoid spots, though all were not so.

As to the origin of the disease, the patient had caused the damp brick floor of the front lower verandah of his house to be scrubbed with sand about 10 days before his illness began. After this had been done a foul stench rose from the floor, and this the patient believed was the poison. It may have been so, in the absence of any other known origin.

Catarrhal sore throat is not very common in Kiukiang, and tonsillitis much less so. Of over 5,000 native patients last year, there were only four suffering from quinsy. The cases seen amongst foreigners were the result of cold, and readily remediable.

The case of hepatic congestion was slight, and made a good recovery.

Among those who suffered from diarrhœa was a child who had had a slight attack in June, from which he recovered by careful dieting.

One afternoon towards the end of July he had it return after being carried some distance in a mountain chair. The same evening, as it was thought that possibly he had eaten something indigestible, a dose of castor oil, guarded by laudanum, was given. During the night he was very restless, and next day the movements were nearly every half-hour. He was given milk only, with bismuth, soda and ipecacuanha, three times a day, and at bedtime Dover's powder. There was mucus in every stool, but at first no straining. Along with the inflamed condition of the intestinal mucous membrane he had fever, intermitting every second day. The third day he was better, and the movements ten in 24 hours. It was soon found advantageous to replace the ipecacuanha by quinine, and to relieve the straining that was now present with every stool by occasional enemata of starch and laudanum. It was three weeks before the fever and diarrhœa had disappeared, and by that time the patient's strength was much reduced. He was all the while living in a bungalow in the Lushan. It is doubtful whether he could have recovered in Kiukiang at the time.

Another case, in a child of three years (one year older than the first), at the same time, was very obstinate, though less severe. The hills did not a little for him also.

The dysentery cases were readily amenable to treatment.

Aneurism of the Aorta.—The patient was aged 45, of stout build, and 5 feet 7 inches high. He had gone home in 1881 on a year's leave, and soon after arrival was troubled with a severe pain behind the manubrium sterni. At first he was treated for rheumatism, but the pain remained, and became worse. Shortly before returning to China he was told that he was suffering from aneurism. On arriving at Shanghai he was ordered to this port, and, two days after coming here, called, that I might examine him. He had been on duty that day, and complained that, in addition to the constant severe pain, he had had traces of blood in his sputum. He said his work for the day had been very light, and that he was not fatigued. On inspection an impulse with the heart's systole could be seen over the whole front of the chest, and a thrill felt on slight pressure over the upper part of the sternum. There was absolute dulness on the right side of the sternum, extending outwards 2 inches at the level of the second costal cartilage, and widening at the level of the upper border of the liver. The right radial pulse was the feebler. A blowing, systolic murmur, loudest at the base, was most pronounced. I advised rest. At 8 o'clock the same evening a friend left him sitting in a chair quite comfortably, and not complaining. I was called to find him dead at 8.15 P.M.

At the postmortem next day, an aneurismal tumour was found on the anterior and right side of the ascending aorta. In front this tumour, which was the size of a small orange, pressed on the posterior surface of the manubrium sterni, and there was an ulcerated surface $1\frac{1}{2}$ inch in diameter by $\frac{1}{8}$ of an inch deep. On the right side the wall of the tumour was adherent to the pulmonary pleura, and a tear, $\frac{1}{2}$ inch in length, was found at that part of the wall just between the middle and lower lobes of

the right lung. In the right pleural cavity was a considerable quantity of blood, which had been pumped in at the tear. This was the explanation of the dulness along the right side of the sternum. The patient's previous medical history is unknown to me.

The sufferer from acute rheumatism, aged 16, had had two attacks in England, and on the way to this place from Shanghai, felt the pains returning.

Between Kiukiang and her home, some 15 miles away, she got slightly wet, and took to bed at once with fever. When seen a fortnight afterwards she was in the semi-recumbent posture, pale and wasted, suffering from severe dyspnœa, and complaining of pain in the left shoulder and hip-joint. The pulse was 115, irregular, weak and small; the temperature 101°; and the respirations 80. The heart's action was violent, and a loud, coarse, systolic murmur, most distinct at the apex, was present. The bases of both lungs were congested, but not to such a degree as to account for anything like the amount of obstruction to the circulation. In the former attacks the heart had been seriously, and probably permanently, affected, so that one could not determine how far the condition was owing to the present recurrence of the disease. On the evening of the following day a very severe attack of dyspnœa came on, and shortly afterwards the patient complained of intense pain in the right thigh, apparently due to an embolus in the iliac or femoral artery. Towards morning she had excessive pain in the left eyeball, and one hour or so afterwards died. Salicylic acid was used, I believe, during the greater part of the illness.

The fracture of the radius—lower third—was caused by a fall.

The patient, an elderly lady, has now had the right forearm broken three times, and the left twice. The susceptibility to fracture did not interfere with good union.

During the year there were six births, one male, four females, and one female still-born.

Among the farming class of Chinese in this neighbourhood there has of late been much poverty and want. Many of them were prevented by the slow falling of the river from getting in an autumn crop, and when spring came, in many places the soil was too wet. Hundreds of those living north of the river were starving at home, and had to go to other provinces begging and looking for work. In some villages the people managed to live by the assistance given *them by the authorities. With this want there was of course much sickness. During the* year about 5,000 applied at the hospital for assistance, a large number, considering that so many have left the district.

There were a good many deaths from cholera in and around Kiukiang in July and August, though the disease was not truly epidemic. The first case appeared in a street inside the city named Pa-ko-shih, and there 18 people died within a fortnight. It was said that a poor family in this neighbourhood wishing to get rid of a female child threw her into a well. The decomposing corpse poisoned the water, and many of those who obtained their daily supply from this source got the disease. Many people denied, and probably correctly, this explanation of the origin of the sickness. My inquiries did not lead me to regard it as proved. While the disease was prevalent only five cases applied at the hospital. One of these—of true Asiatic cholera—died, the others were removed by their friends. Every year there are some sporadic cases, and this summer there were more than usual. It seems, if reports are true, that it must have been epidemic in some towns in Kiangsi.

There has been very little small-pox during the past year in this neighbourhood. The Taotai, stimulated by the success of the Roman Catholic hospital, opened a dispensary and vaccination station in the city last year. Vaccinators were also sent to outlying villages, and thus something is being done to lessen the unfortunate results of variola.

The following case of catalepsy is interesting in that the patient remained perfectly conscious all through the seizure :—

Liu Fo-me, a native of Ch'ang-chao-fu, Kiangsu, 22, 5 feet 6 inches in height, of slender build, an intelligent-looking man, gave his history thus. In January 1880, while living at the Roman Catholic College, Fuchow, Kiangsi, he felt unwell one evening, a little before the usual bedtime. He awoke at midnight, perspiring very freely; got up and urinated, and went back to bed. In the morning he rose with the others, though not feeling quite well, dressed, and went to morning prayers. At breakfast, at 7.30 A.M., he felt weak and unable to eat with his usual appetite. When study began at 8 o'clock he found himself unable to attend to it, and felt that he was losing control over his arms and legs.

He was then carried to bed, and a Chinese doctor summoned. The medicine taken did not help anything, and he lay all that day and the next, till 11 A.M., unable to move hand or foot. Rice water and tea were given him occasionally, and he urinated once. All the time he was in bed he was able to answer questions and talk as usual. On the morning of the day after the seizure a doctor put some medicine in his nostril, which caused him to sneeze. He felt a little better soon after, and was able to walk by 4 P.M. Next day he was a little weak, but in other respects all right. A second similar attack came on in the spring of 1880, and a third in January 1881, under the following circumstances. One of the priests, who was sick, was about to leave Fuchow for Kiukiang. The evening before he started Liu felt unwell, and went to bed at the usual hour. He awoke about midnight, sweating profusely; urinated, and returned to bed, and before falling asleep found that he could not change his position. A fellow-student shifted him a little, and he slept at times till morning. The bishop then seeing his condition had him carried to the boat for Kiukiang. He was able—without medicine—to walk by 4 P.M. the same day. Five days later, when near Hukow on the voyage to this place, he had another seizure, differing from the others in that on awaking from his first sleep he was perspiring freely, but the control over his limbs had already gone. On the third day he got better, some antispasmodic medicine having been given him. He was seen in Kiukiang by my predecessor Dr. Jardine, who prescribed some medicine, and after a nine days' stay he returned to Fuchow, not having had a seizure meantime. Last year he had only one attack. This year he has had two, in March, and the last on 1st May. This last time he had as usual a severe perspiration about midnight, got up, and sat for a little, knowing by a peculiar feeling of weakness in his legs that an attack was coming on. In a little he lay down, and was unable to move. The attack passed off in 12 hours. During each seizure he has been able to talk as usual, and is quite alive to all around him.

His father is alive, but is constantly taking tonic medicines. His mother is alive and well. Of three brothers, one, a medical student, is weakly, the others are healthy, as is an only sister.

His teachers give him an excellent character, and deny that he is at all of nervous temperament. It seemed to me, partly from his own account and from the information the bishop gave, that each seizure came on after he had been excited in one way or other. This view the priests, who had knowledge of him for years, could not agree with. Careful examination of the circulatory, respiratory, digestive, nervous, and genito-urinary systems revealed nothing, except that he is slightly anæmic. It was advised that he should have rest from study for a year, and an iron tonic was given him. During his stay under my supervision he had not an attack.

I am indebted to Mr. Harbour Master GÜNTHER for the following data:—

Month.	Temperature.		Temperature, Mean.		Rainfall.	
	Max.	Min.	Max.	Min.	Days.	Inches.
1882.	°	°	°	°		
October	80	48	70	63	5	3 1/2
November	64	38	56	48	13	3 1/2
December	67	25	46	35	3	0 1/2
1883.						
January	52	23	43	31	5	1
February	47	28	40	35	14	5 2/5
March	71	36	56	46	7	3 2/5
April	88	41	63	55	19	13 2/5
May	82	57	71	65	20	15 1/2
June	87	68	81	74	10	8 2/5
July	92	72	85	80	9	7 1/5
August	94	75	87	80	7	4 3/5
September	97	63	82	74	9	3

Total number of days of rain for the year, 121; total rainfall, 69.4 inches.

Dr. J. G. Brereton's Report on the Health of Chefoo for the Year ended 30th September 1883.

For the following meteorological abstract I am indebted to Mr. Jennings, Harbour Master:—

Month.	Thermometer.			No. of Days Fog.	No. of Days Rain.	No. of Days Snow.
	Highest.	Lowest.	Average.			
1882.	°	°	°			
October	78	38	58	...	6	...
November	60	28	44	...	2	3
December	56	13	35	...	1	9
1883.						
January	44	9	27	...	...	5
February	48	18	33	1	...	4
March	59	28	43	...	1	3
April	76	36	56	5	3	...
May	86	44	65	...	4	...
June	92	60	76	...	...	...
July	94	64	79	1	6	...
August	91	63	77	...	3	...
September	85	57	67	...	4	...

It will be seen we have had a high thermometer during June, July and August, but yet the average temperature has been comparatively low. During these months we had only two days of actually hot weather; the heat, however, experienced throughout the day was never accompanied by the feeling of relaxation and want of energy so frequently felt by those in moister climates; and, further, the hot days were generally followed by a cool, refreshing night. The nights here are never oppressive, the thermometer seldom rising over 80°. During the winter of 1882–83 we had a very much greater fall of snow than usual, so much so that many of the roads to the adjacent villages were impassable. Even the high roads, where so much traffic is generally carried on, were obliterated, and not a few Chinese were lost in endeavouring to find their way through the numberless snowdrifts which completely put a stop to the passage of mules or carts.

Our spring weather was perfect, and was unaccompanied by the hot southerly winds which are frequent at this time of year. During this time the health of the foreign community was excellent; there was scarcely a single case of illness except of the most trifling character. A few cases of influenza occurred, but there is nothing worthy of remark in these cases except that in one or two instances recovery was rather protracted.

During the summer cases of diarrhœa and fever were fewer than usual; of the latter, four occurred in a house situated outside the settlement, the disease coming on without any prodromata, temperature running as high as 104° Fahr., the fever subsiding after four or five days.

A few cases of cholera occurred during August and September.

The only fatal case was that of a child aged about 10 months. In this instance the disease proved fatal in four hours. The child had been spoon-fed, and did not present the appearance of being particularly well nourished.

Experience here as well as elsewhere shows that this disease when treated promptly, on the very first approach of diarrhœa, can generally be checked, but if neglected, even for a short time, the risk of a fatal termination is very great. Hence in all cholera epidemics special attention should be paid to apparently trifling cases of diarrhœa. The Chinese in the surrounding districts suffered more or less severely, but I have been unable to obtain even an approximate idea of the mortality among them.

The deaths which took place during the past 12 months were due to the following diseases:—

Tetanus—non-resident.	Choleraic diarrhœa—non-resident.
Small-pox—non-resident.	Cholera (from gunboat)—non-resident.
Anthrax—non-resident.	Apoplexy—resident.
Aortic incompetency—resident.	Ulceration of bowel—resident.
Typhoid fever—non-resident.	Charcoal poisoning (on board ship)—non-resident.

The case of tetanus which terminated fatally was the result of severe frostbite. The patient, a negro, had both feet completely destroyed as far as the articulation of the os calcis with the cuboid. As soon as the line of demarcation appeared, removal of the dead portions was proposed, but the patient refused his consent. Poultices were then applied for about 10 days, to assist separation; at the end of which time he, in the evening, gave his consent to operative measures. It was then decided to remove both feet by SYME'S method on the following morning. During the night, however, tetanus set in, and advanced so rapidly that by 7 o'clock in the morning he had most violent spasms of opisthotonos. Although the case now presented the most unfavourable aspect, it was deemed advisable to proceed with the operation as affording almost the only chance of recovery. Chloroform having been administered and ESMARCH'S bandage applied, the left foot was removed by SYME'S method, very little blood being lost during the operation. The patient passed easily under the influence of chloroform, but at the conclusion of the operation the pulse became so weak that it was decided to postpone operating on the other foot. Brandy and strong beef tea were given with a view to restoring the circulation, but without avail, death taking place on the following day. My thanks are due to Dr. WESTWATER and Mr. DOUTHWAITE, who kindly assisted me on the occasion.

During the last few years I have been called upon to treat a good many cases of frostbite of some days duration, and where it was impossible to determine accurately the depth or amount of tissue involved, all sensation being lost in the part. In almost every case the treatment I have adopted is the frequent application of warm linseed poultices. This has the effect in minor cases of restoring warmth and sensation to parts not actually dead, and in those cases where destruction of tissue is complete, it hastens the formation of a line of demarcation, thus

indicating the extent of the injury. If then any operation is decided upon, the sooner it is done the better, as delay is not only useless but dangerous.

A case of compound comminuted fracture of the tibia and fibula occurred, in which union was delayed in the tibia.

Various appliances were used in order to keep the limb immovable, such as McIntyre's splint, starch bandage, and plaster of Paris; but all failed to induce union. Violent percussion with a hammer was then used at intervals of a week or 10 days, and at the same time the patient was directed to walk about with the aid of crutches for a certain time each day. After this treatment had been pursued for about a fortnight, a small piece of bone was extruded from over the seat of fracture; the wound of exit soon healed, and from this date complete osseous union set in.

I have to record eight births, four females and four males. Three of the children were born to visitors; the mothers of five were residents. All were natural labours and progressed satisfactorily.

NOTE ON THE FEVERS OF CHEFOO.

By W. L. PRUEN, L.R.C.P.Ed., L.R.C.S.Ed.

THERE *are two fevers in this place which though much allied yet possess differences as* characteristic of their individualities as are the differences of typhus and enteric fever. By the natives the one is called *wén-ping*, the other *ten-tu-tzŭ*. The *wén-ping* is a simple continued fever without either eruption or diarrhœa, and is characterised by the absence of perspiration from the commencement until the crisis. Its duration varies from a few days to a few weeks; it presents no relapses; and is rarely, if ever, fatal. Nursing rather than medicine benefits its victims.

In an unusually severe case in which the temperature was at 105° I gave jaborandi, which brought the temperature down to normal in a few hours, but so depressed the patient's vitality that I dare not recommend this treatment. *Ten-tu-tzŭ* is attended with dysentery, but the form prevalent here is so little painful as to make new-comers hesitate over the diagnosis. It is very amenable to regularly repeated doses of opium and ipecacuanha in small quantities in connexion with a rice diet.

Of the two diseases the following are typical cases. In a native inn in the summer of *1882 were about 20 coolies. In the course of about 10 days four or five of them had ten-tu-tzŭ,* and other four or five the simple continued fever. They all made a good recovery, most of them in about seven days. One of the dysenteric patients after walking to our dispensary for help fell down fainting, but he quickly came round; and two of his companions were nearly in the same condition. At the same time I attended, twice daily, one man in a house near us who had the simple continued fever; he scarcely perspired for 28 days, but then made a good recovery.

Dr. J. H. LOWRY's Report on the Health of Pakhoi for the Half-year ended 30th September 1883.

THE health of the small foreign community, now consisting of eight, has been remarkably good during the six months under review. Beyond a case of chronic diarrhœa in a visitor from Hoihow, no serious case of sickness has come under my observation. Considering the amount of sickness there seems to have been at the other coast ports all summer, the healthiness of this place must compare favourably. The temperature has differed little from that of last summer, the average day record being a little lower, while the night remained about the same. It is satisfactory that now no European lives in the Chinese town, all being housed on the healthy plain to which I have before referred.* Substantial foreign houses are making their appearance, and in time I have little doubt that this port will be found one of the best to spend the long summer of the South in. Those who have experienced summers at Swatow, Canton and Hoihow speak in high terms of this port; it has also been said that were steam communication with Hongkong more complete, Pakhoi might even become a seaside resort. Early in May, as the hot season set in, a rather troublesome affection of the scrotum came under my notice, and might perhaps be recorded here.

I saw five cases, all being more or less the same. When seen, one or two small sores had formed on the scrotum. They varied in size from a split pea to a sixpence; the edges were thickened; discharge, not profuse, of a greenish hue; surrounding tissue red and irritable. The pain was considerable, being so severe in one case as to deprive the patient of rest. Under simple treatment and protected from further irritation, they readily healed; a zinc lotion, and subsequently benzoated zinc ointment, were all that was required; and a suspensory bandage was directed to be worn to protect the scrotum. One of the cases recurred, but gave way again to treatment.

Though I did not see these cases till the sores had formed, I believe they were brought about by the excessive sweating of the part, coming as they did at the commencement of the hot weather; it being likely that the irritation was caused by starched white trousers that had not been worn through the winter. The original affection may have been of herpetic character, and the same irritation caused the sores.

Health of the Native Community.—The town has been singularly free from sickness, and the death rate has, I understand, been low. Through the exertions of Mr. Acting Consul FRASER, the main street of the town has been kept fairly clean, scavengers being daily employed in the work; and it is to be hoped the Chinese will see the object of the improvement, and extend the scavenging.

* Customs *Medical Reports*, xxiv, 27.

There has been no return of the epidemic *luen-tzŭ* (鼸子), which caused such panic last year. From the end of March I watched with interest for its return, but up to the end of September, so far as I can find out, not a single case has occurred here. Heavy rain fell in March, and again there were eight days of it in April, but only six in May. What fell in March did much good, cleansing everywhere the accumulations caused by the dry winter. A point to be remembered in reference to the epidemic is that the really hot weather did not commence till May. At the prefectural city of Lienchou the disease again broke out, and was at its worst during May and June. By the middle of July it had entirely disappeared. The deaths in the city itself were said to be few compared with last year, but there were thought to be many deaths in the outskirts.

During March Mr. Acting Consul PLAYFAIR, while on an official tour to Yü-lin-chou, in Kwangsi, kindly made further inquiries for me in the districts through which he passed as to the prevalence of epidemics, but he could find no trace of any sickness similar to what existed here and at Lienchou. The following case I met with during the summer, and it is of some interest, as the patient once suffered from *luen-tzŭ*, and recovered :—

AH SING, æt. 22, consulted me concerning a soreness he had in his left leg, with difficulty in walking. The history he gave was that five years ago he had been attacked by plague. After one month's illness he recovered, although several times during the course of his malady he was thought to be dead. He had two buboes in the groin, both of which had discharged matter, that being the turning point in his illness. The buboes subsequently healed, one remaining a hard swelling, formerly larger than it is now. His whole limb from the same date had increased in circumference, and was the cause of his difficulty in walking. General health very good.

Examination.—Patient was a healthy-looking young man with an unblemished skin. On making him walk I could detect little wrong in his gait. His left thigh I found to be larger than the right; it gave the feeling of being indurated; the leg was also increased in circumference, and there was varicosity of the veins; the foot appeared slightly enlarged. At the inner aspect of the left groin there was a hard swelling as large as a small hen's egg; round it there was slight varicosity of the veins, and exterior to the swelling there were two rather large scars.

The following circumferential measurements were taken :—

	RIGHT.	*LEFT.*
Base of Scarpa's space	17 inches.	19 inches.
Middle thigh	16 „	18 „
Above knee	14 „	15 „
Calf of leg	12½ „	15 „

It has been reported that cases which recovered from plague have frequently remaining buboes and indurated anthrax, but in the above case enlargement of the limb likewise dated from the period of recovery. What is this enlargement? Is it part of the zymotic lymphangitis, or is it the accidental occurrence of another disease? The anatomical characters observed in fatal cases of plague show that both glands and lymphatics are more

or less infiltrated with a sanguineous fluid. Has that been the case here, and is it possible that the whole lymphatic system of the left limb has become blocked, and has remained so for a period of five years? It is at all events probable that the lymphatics are at fault in some way or other.

Though this attack has evidently been a severe one, yet there are no symptoms indicating that other sets of glands have been injured. In many of the cases observed the internal glands did not escape, the bronchial, mesenteric and other glands having undergone changes.

That it is not elephantiasis there is, I think, sufficient evidence. The swelling has not continued to increase during the period patient says it has existed. There is no history of periodic attacks of fever. The swelling of the foot and leg is trifling compared with that of the thigh, the characteristic swelling in elephantiasis being in the foot and leg, commencing first in the foot. The natural contour of both the thigh and leg was fairly maintained. I regret the blood and urine were not examined, but I lost sight of the patient, who was very superstitious. He told me he did not like talking about his past illness lest it might return.

The use in all forms of ophthalmia of an ointment consisting of 1 grain of red oxide of mercury to an ounce of vaseline was recommended to me a couple of years ago by Mr. BADER of Guy's Hospital. I have found it very efficacious. Among the sampan people here purulent ophthalmia is very common, whole families sometimes suffering from it in various degrees of severity. As gonorrhœa is very prevalent among the same class of people, I have little doubt the severe cases are caused by that contagion. From the same class a great many children are brought to me with either one or both eyes hopelessly ruined, due to the carelessness of the women, I do not doubt, while they are suffering from purulent discharges. Mr. BADER now adds $\frac{1}{5}$ of a grain of daturin or atropin, to avoid iris complications. In any severe cases I always put in a few drops of an atropine solution, at least once daily.

Recently I had a very bad case of gonorrhœal ophthalmia, in a sailor from H.I.M.S. *Fei-yün*, which I energetically treated with the ointment, using at the same time some atropine solution. One eye was hopelessly lost when the man came to me. The lost eye had been attacked 12 days previously, the second some days later.

The case just related points out the necessity of the Chinese having some one on board their ships of war who understands at least the rudiments of household medicine. Had this fine young fellow had even the simplest treatment, it is probable he would not have been maimed for life. In the same ship several of the men had been suffering from diarrhœa, and on inquiring I found that there were no medicines other than Chinese on board, which took both time and trouble to prepare. Subsequently I induced the captain to obtain a bottle of chlorodyne, and I taught him how and when to administer it, so he has now a handy remedy always ready, and one which I find agrees very well with Chinese. It is expected that a mission hospital will shortly be opened here, and no doubt it will be appreciated by a large number of natives, who are keen enough to avail themselves of foreign therapeutics.

I append a table of meteorological readings for the half-year. The thermometer readings are my own; the remainder are abstracted by Mr. Assistant Examiner MASON from the Custom House record.

MONTH.	WINDS.							BAROMETER.		THERMOMETER (Fahr.).							
	No. of Days N. to E.	No. of Days E. to S.	No. of Days S. to W.	No. of Days W. to N.	No. of Days Variable.	No. of Days Calm.	Average Hourly Force.	Highest.	Lowest.	Highest by Day.	Lowest by Day.	Highest by Night.	Lowest by Night.	Average Day.	Average Night.	No. of Days Fog.	Days on which Rain fell.
							Miles.	*Inch.*	*Inch.*	°	°	°	°	°	°		
April	4	15	3	2	6	...	3	30.15	29.78	86	60	83	61	78	70	3	8
May	6	7	14	...	4	...	4	30.07	29.71	89	71	87	67	84	77	...	6
June	...	15	8	...	7	...	2.5	29.99	29.68	91	76	88	75	86	79	...	11
July	2	14	6	4	5	...	3.7	29.97	29.54	91	77	89	77	86	80	...	16
August	3	12	5	7	4	...	3.5	29.97	29.60	88	74	85	74	83	77	...	18
September	9	9	2	5	5	...	4.4	30.06	29.76	89	71	87	71	85	77	...	8

Dr. T. RENNIE's Report on the Health of Foochow for the Half-year ended 30th September 1883.

THE past summer was the hottest experienced for many years. The hot season, commencing rather abruptly about the middle of June, terminated equally suddenly on the 20th September. During that period the average maximum temperature was 88°.7 Fahr., and the average minimum temperature 82°.7 Fahr. July was the hottest month; the average maximum being 89°.5 Fahr., and average minimum 84°.2 Fahr. Marked and sudden variations in temperature, so common in our hot weather, were absent. The extreme daily range was 10° Fahr., and the mean range during the hot months was 5°.8 Fahr. The season was almost devoid of thunderstorms. Typhoons, so common along the coast, never reached us. When from barometer readings a blow seemed imminent, no wind came. The rains in May, which ordinarily cause the Min to overflow its banks, were very slight (there being no flooding of the Min valley), and during the following months the rainfall was limited to a few days about the middle of July, three days in the beginning of August, and four days in the second week in September. Throughout the season the barometer stood rather higher than usual.

During the earlier part of the period reported on the health of the foreign community was good, but towards the end of summer mild cases of ague, diarrhœa and congested liver were very common; and among graver ailments were four cases of typhoid fever, five cases of dysentery and two cases of cholera.

Four births and two deaths have to be reported.

In July a lady over 50 years of age, who had resided for more than 30 years within the city walls, died of typhoid fever.

In September a young, robust, healthy lady died of cholera.

On 1st September at 10 A.M. painless diarrhœa commenced, and went on unheeded till 1 P.M., when, after having been to stool some 30 times, she became alarmed and sought medical advice. Then the patient's face was somewhat pinched, but there was no sign of collapse. Patient having gone to bed, under protest, brandy and chlorodyne were administered, and hot poultices were applied to the abdomen. In 20 minutes vomiting commenced, with renewed purging and intensely painful cramps in the limbs. A hypodermic injection of morphia was given, but as this produced but little effect it was followed by an enema of brandy and laudanum. By this time the surface of the body was cold and the face pinched. Diarrhœa and vomiting ceased, so that stimulants could be given by the mouth. Bottles filled with hot water and placed by the limbs relieved the cramps, and soon the body and extremities got warm. The anxious and pinched expression left the countenance, and the patient said she felt better. From time to time small quantities of cold beef tea with brandy were given, and for two hours all seemed to go well, when suddenly the whole surface of the body became livid, and at 5 P.M. the patient died. Just before and immediately after death large quantities of rice water excreta were discharged.*

* For the notes of this case I am indebted to Dr. ADAM.

On 17th August a native male domestic in the house of the deceased caught cholera, and, under treatment, in three days was convalescent. For the first 36 hours of his illness this servant was treated in his master's house, and on recovery did not return to his former employment. On 20th August a native female domestic in the same house became affected, and immediately set out for her home in the country. While there her son died of cholera, but by the 28th August the mother was sufficiently recovered to be able to return in quest of her former situation. Her mistress, fearing contagion, refused the amah's request.

An old Foochow resident, who had just recovered from a mild attack of congestive apoplexy, and had left on 9th September for the North, to escape the remainder of our hot summer, was, on board the steamer 36 hours out from Foochow, seized with cholera, and soon after reaching Shanghai, 13 hours from the commencement of his illness, died. On inquiry it seems unlikely that the disease could have been contracted on board ship, and it is quite probable that, being in a weak state of health, he may have carried infection with him from Foochow.

The four cases of typhoid fever were of a more severe type than usually met with here. Although occurring about the same time, judging from the conditions in which the individuals were placed it did not seem likely that any common source such as milk supply was the cause. As the disease exists among natives, and as residents are frequently and at all times confronted with nightsoil buckets, there are abundant opportunities for contracting typhoid fever.

In spring an old China resident had dysentery followed by ulceration in the sigmoid flexure, and hæmorrhage to an alarming extent. Fearing another attack of perhaps a more serious nature, patient was induced to go on sick leave.

Among natives the past summer has been most unhealthy, and owing to an epidemic of cholera the mortality has been very great. The city and densely populated suburbs are in a fit state to foster any epidemic where filth is an essential. For more than 12 months there has not been at one time a fall of rain (the only scavenger) sufficient to flush the streets with their drains and to cleanse generally the surroundings of native habitations. The summer was, as I have said, unusually hot and the air unusually still. Excepting those living near the banks of the river, natives depend on surface wells, ponds and canals for their water supply, and in consequence of the drought many wells and ponds were dried up. The water supply, usually very impure, became by concentration much more filthy.

The annual visitation of measles in April was of a very severe type, and caused many deaths.

In June and July summer diarrhœa was very prevalent and very fatal among children living in the city. Diarrhœa among healthy adults was seldom heard of.

In August cholera made its first appearance in an epidemic form since 1877. About the middle of July a number of people in the village of Chungchi, situated behind the arsenal and dockyard at Pagoda Anchorage, died of a disease of which the symptoms were diarrhœa, purging and vomiting, cramps in limbs, collapse, and in most cases terminating fatally 10 hours from the onset of the malady. On the 8th July an imported case of cholera was admitted into the Pagoda Anchorage Seamen's Hospital. Among natives at the Anchorage, from the middle till the end of July the disease was very prevalent. On the 25th July 25 natives are said to have died at Chungchi, and so fatal was the disease that an observer remarked that it seemed to him that all affected died.

Towards the end of July eight seamen of H.B.M.S. *Espoir* became affected. The supposed source of disease was aerated water made by a native from the water of a surface well in the infected village. Some of the sailors previous to their illness were known to have partaken of this beverage. Of the eight men affected, five died.

From Pagoda Anchorage the disease spread among the inhabitants of boats, hamlets and villages along the banks of the river downwards in the direction of the sea and up river towards Foochow, making its appearance about the 10th August among the natives of Lautong, a village built 2 miles from the mouth of a creek 5 miles long, which leads from the Min to the moat surrounding Foochow city, and at that part of the southern suburb in the neighbourhood of the fish market called Houchou. At both these places an immense trade in fish is carried on, almost all the fish from fishing villages on the Min and at the mouth of the river being landed at Lautong previous to being carried a distance of half a mile to Houchou, to be retailed to fish dealers and hawkers. Both places are very low lying, many houses at Houchou being built over pools of water which have no communication with the river unless at its almost annual floods, when the Min valley becomes inundated. Behind the houses are numerous ponds, and in some of them fish are reared on nightsoil. Other ponds individually serve numerous ends. In them clothes are washed, nightstools scrubbed, and fish that looks stale or shrivelled is, previous to being exposed for sale, soaked to freshen its appearance and increase its weight. Frequently quantities of fish arrive smelling so foully as to be unsaleable, but being deodorised by burial for a night or two in the ground, and after a bath in the nearest pond, the stuff is sold to and consumed by the poorer natives. On the 14th August many natives at Lautong and at Houchou died. On the 17th many cases of cholera occurred at different points of the southern suburb. Between the 17th and 25th August, in a partly detached bit of suburb on the river bank, 100 people died out of a population of 600. At this time the disease was very prevalent among the floating population. In a cargo-boat 8 men died out of a crew of 16, and on board a Chinese war junk 10 men died out of a crew of 20. People living in sampans, thinking the disease had some connexion with their crowded anchorage by the muddy banks of the river, moved their boats and cast anchor in mid-stream, but even there the disease followed them. In one sampan three out of four occupants died. There may have been numerous instances of a similar mortality, but only authentic cases are quoted. From the 14th August deaths from cholera daily occurred at Houchou, which seemed the favourite haunt of the malady. With varying degrees of intensity the disease raged here and there in the city, suburbs and surrounding country villages, being particularly active from the 17th to the 25th August and about the middle of September. Towards the end of September it began to take off.

In country villages the inhabitants were more than decimated, and the malady was more prevalent in the suburbs than within the city walls. It is generally supposed that over 80 per cent. of those affected died. No statistics are kept, and it is impossible to form a correct estimate of the mortality. By finding out from likin officials the number of coffins that daily passed the different likin stations in the city and suburbs, it is calculated that from the 14th August to the end of September at least 15,000 natives must have died of cholera.

As to the nature of the disease there seems little doubt, for the symptoms were those of Asiatic cholera. The general course of the disease, which in most cases terminated fatally

in from eight to ten hours, was as follows. Persons in ordinary health, usually adults under 35 years of age, were seized with violent purging and vomiting accompanied by profuse perspiration and great prostration of strength. The stools became more frequent, and resembled in consistence and appearance the water in which rice has been boiled, and the vomiting became more violent, with intense thirst and burning pain in the region of the stomach. The countenance became pinched, and the skin of the hands and feet got shrivelled. The pulse disappeared at the wrist, and speech was lost. The eyeballs sank deeply into their sockets, while the extremities and the surface of the body became livid. No urine was passed, and the victims, covered with a clammy sweat, lay quite listless till they died.

In many cases diarrhœa preceded the more violent symptoms by from a few hours to several days. Sometimes there was no vomiting, only nausea. Such cases were considered by native physicians mild forms of the disease. When the urine was passed freely a favourable prognosis was also given. Sometimes the malady was very insidious.

At 8 A.M. on the 26th September one of the in-patients of the Foochow native hospital (patients provide themselves with food) had a loose stool followed by nausea and slight vomiting. Between 8 A.M. and 12 noon, when the patient was collapsed, he had only had five watery motions and vomited five times. In the early stage the patient had several doses of a cholera mixture containing opium, camphor and capsicum, and afterwards four subcutaneous injections of ½-drachm doses of either, while a mixture of essential oils and elixir Halleri was frequently given by the mouth. Heat was applied to the extremities and body by hot bottles. All failed to excite reaction, and the patient lay pulseless and speechless, but sensible, till 4 P.M., when he died.

The shortest duration of disease heard of occurred in the case of a member of the Emperor's body guard down here on a visit to his father, the Tartar general.

In the middle of a feast given by the father, the son was suddenly seized with vomiting and purging, and died in three and a half hours. Previous to seizure the patient was in perfect health.

In most cases when advice was sought early the symptoms yielded readily to ordinary treatment. Some natives provided with pills containing opium, camphor and capsicum to arrest diarrhœa, and a mixture of essential oils and elixir Halleri to promote reaction, said that when they treated patients at an early stage of what was apparently real cholera they had in many cases arrested the disease. In the advanced stages all remedies seemed equally futile.

From the history of the malady in this district it would seem to have been imported. In the city summer diarrhœa is every hot season more or less prevalent. Those who suffer are children, and there is seldom that intense prostration of strength, pulselessness and loss of speech so characteristic of Asiatic cholera. Such numbers of people as have died this autumn in such a fearfully rapid manner do not annually die.

If cholera be communicable by the intestinal excretions of sufferers, there are in Foochow ample means for its propagation. All nightsoil from public latrines and nightstools is carried off in open buckets by the peasant inhabitants of country villages, who store it close to their homes in tanks, where it decomposes and ferments till required in the gardens and fields. In the vicinity of the tanks and gardens there is always a pond, which supplies water to dilute the nightsoil previous to pouring it over the vegetables. Between washing buckets and leakage

from surrounding gardens the water in the pond must get very much contaminated. The continued contact of the peasants with the evacuations both of the healthy and the diseased seems to be the only reason for the greater prevalence of the malady among country people than among the denizens of the crowded city. Peasants previous to conveying their vegetables to market drench them with water to keep them fresh. This they accomplish by wading into the nearest pond until their burdens get immersed in the filthy water. Passing along the streets fruitsellers may be seen pouring water, as likely to be contaminated with choleraic evacuations as not, over their fruits, peeled sugar-cane and slices of water melon. Some philanthropist thinking water melon was the chief source of the disease, had placards warning people of the danger they ran in eating this fruit placed in prominent situations. By natives water that has not been cooked is seldom drunk; but fish, vegetables and fruits may have all been polluted with the evacuations of the afflicted. The Chinese are extremely careless as to the cleansing of their dishes and cooking utensils, so that after all water may have been the carrier of the malady.

It is pleasant to have to record so few cases of cholera among foreign residents. Several chair-bearers in foreign employ died of the disease, but at an early stage the coolies recognised the serious nature of their ailment, and while strength remained went off to their homes. In several instances poor afflicted natives, knowing their end was near, laid themselves down at the gates of European houses, hoping that when they expired their remains would be decently interred. Frequently, poor people who had died over night were in the morning found lying in the streets. Coffins, often hurriedly and wretchedly made, containing the dead were constantly met as they were borne through the streets for burial in shallow graves on the hills. The fortunate escape of Europeans can only be due to their cleanly habits and the non-contagiousness of the disease. Here foreign residents almost invariably drink natural aerated waters or aerated water manufactured under European supervision. Fresh water fish is never eaten by Europeans, and salt water fish, unless perfectly fresh, is never seen in European houses.

Seeing that native gardeners are bred up with the idea that growing vegetables without nightsoil is almost an impossibility, we cannot be too careful in overlooking the operations of our gardeners. Vegetables in a raw state, unless grown in a private kitchen garden, should never be eaten.

Dr. A. HENRY's Report on the Health of Ichang for the Half-year ended 30th September 1883.

IN my last Report* I mentioned that with the beginning of spring an exceedingly unhealthy period had set in at Ichang. I have now to add that this continued without intermission until the end of September. During all this time the native population was never free from serious sickness of some kind or other. Three distinct types of disease occurred; and at this stage I may note briefly their nature and the manner in which they successively appeared. A class of fever known to the Chinese as *shang-han-ping* (傷寒病) began to prevail in March and continued until the beginning of June. An epidemic of cholera broke out in April and lasted until nearly the end of July. Malarial fever then became very rife and attacked a considerable percentage of the native population during August and September. It is satisfactory to note that the resident foreigners preserved very good health throughout all this sickly time. Of the native portion of the Customs staff, two members were attacked by cholera, of whom one died, while others, with their families, suffered a good deal from ague.

In the present state of our knowledge of the causation of disease, it is difficult to explain why one year should witness a more severe visitation than others. I shall try, however, to show that in Ichang there were causes at work which contributed to make 1883 such an especial year of sickness and mortality. The insufficient food of the people was doubtless an important aid to the propagation of disease. In 1882 the rice crop failed; and towards the spring of this year—the time when the community began to suffer from fever—great numbers of the population of Ichang and the surrounding district were subsisting on very inferior kinds of food, as rice had become scarce and dear. In my visits to houses of the sick I was often struck by the makeshifts for a meal with which the poor people had to be content. In many cases, for example, the daily fare consisted of pumpkins pounded into a mash and thickened with a little coarsely ground wheat. Typhus fever is well known to be an associate of famine; and it was not, then, astonishing to see this spring ushered in by a series of cases of fever. Amongst a people insufficiently fed, cholera and malaria, without doubt, make more progress than amongst a well-nourished population. A second cause of epidemic disease, but one, unfortunately, always present, exists in the wretched sanitary condition of the city and suburbs. Why disease is not always with us, not why epidemics should sometimes occur, is the problem. In addition to this cause, however, other factors, such as various conditions of air and soil, must come in. During the period under review a low temperature prevailed, and in the earlier part of the half-year there was an excessive rainfall. To the first of these, a low temperature, I should ascribe some importance. The popular idea of cool summers being unhealthy ones may be well founded. More investigation, however, is required; and I would suggest that in connexion with the projected meteorological service, observations calculated to throw light on the origin of disease should be included. The varying level of the ground water, *e.g.*, might easily be observed.

* Customs *Medical Reports*, XXV, 1.

From these general considerations I now pass on to speak in detail of the three forms of disease mentioned. The extreme difficulty of study among the natives of this port, not to speak of the limited time at my disposal for purely medical work, must be my excuse if my information seems somewhat meagre.

The first form to appear was *shang-han-ping*. I am forced to use the Chinese name, as my experience as yet has been too limited to enable me to state what precise maladies are included under this term. I have little doubt, however, that it embraces at least our typhus and typhoid, or fevers very similar to them. One class of the disease which occurred here is described as being a fever of continued type, lasting 14 to 21 days or more, and accompanied by diarrhœa, wasting, delirium at night and great prostration. Sometimes a rash is observed, and relapses are frequent. This is apparently typhoid. Another variety is more acute; an eruption of red spots is often noticed, while the general condition of the patient is much more grave, being characterised by headache, great delirium and loss of consciousness. Constipation is the rule in these cases. This may be typhus. Owing to the imperfect sanitary arrangements which exist here, these kinds of fever are common enough every year. During March, April and May of the present year there was an unusual and excessive number of cases. Every street had its houses of fever, and numerous deaths resulted. Not only in Ichang but in all the neighbouring towns did the epidemic occur. In Shashih, Ching-chou-fu, Hohsüeh, etc., the mortality was very great. In the latter places cholera did not appear until after the fever epidemic was practically over; whereas in Ichang cholera and *shang-han-ping* prevailed at the same time.

Before entering on an account of the epidemic of cholera it will be as well to make some remarks on the nomenclature used by the Chinese when speaking of it, and on the occurrence of previous epidemics in the locality. The terms *huo-luan-chêng* (癨亂症) and *wu-sha-chêng* (烏痧症) are both given to cholera. The former, like the English word, seems to cover two diseases similar in symptoms and hard to distinguish save by their results, viz., the sporadic rarely fatal English cholera and the epidemic malignant Asiatic cholera. *Huo-luan-chêng*—presumably the milder form—is said to occur annually in the summer months. Last year some cases occurred, of which one or two were fatal. This, however, I did not learn at the time. *Wu-sha-chêng* is applied to cholera of a malignant type, characterised by sudden seizure, great abdominal pain, little vomiting and purging, blackness of the nails, lips and extremities, and death in a few hours. Such cases did not occur in Ichang this year, but in other places the epidemic was apparently more severe, and the name *wu-sha-chêng* was then used.

I can find little information concerning previous epidemics. Dr. MACFARLANE * says that cholera last appeared in 1850. I learn, however, on good authority that an epidemic visited the city and surrounding villages in the summer of 1864. *Huo-luan* and *wu-sha* both occurred, and more than 2,000 people are estimated to have died. The preceding year had been dry in the beginning, but very wet in its latter months; in consequence, the crops were poor. To the irregularity of the seasons and the scarcity of food the Chinese ascribe the epidemic of 1864. Asiatic cholera prevailed in Amoy during the summer of 1864,† and

* Customs *Medical Reports*, xx. 20. † *Ibid.* xix. 22.

several foreigners and many natives died. During 1862, 1863 and 1864 cholera visited Shanghai. The epidemic of 1877 did not reach Ichang.

With regard to the epidemic of the present year, its most noteworthy feature was its early occurrence, the first case happening about the 10th April. The disease continued in one part of the city and suburbs or another until nearly the end of July, since when no cases have been reported. In all the towns both above and down river cholera was much later in its appearance. In Wanhsien, Kueichou and Chungking no cases occurred till July, while in Shashih, Ching-chou-fu and other places east of Ichang the epidemic did not arise until the last days of June. There is little communication between Ichang and such towns as Shih-nan-fu, which are situated inland from the Yangtze; and I have not heard of the occurrence of cholera there. At the coast ports also the epidemic appeared later than at Ichang. There seems, then, no reason to suppose that the disease was imported, neither was this year's epidemic a recrudescence of an old one, since the last occurred so long ago as 1864. The facts seem to point to a local origin. In the immediate neighbourhood the course of the epidemic was very limited; for example, it did not cross the river even to An-an-miao, a village on the opposite bank, connected with Ichang by a constant traffic. Shashih is distant from Ichang about 70 miles, and there is great communication between the two places; yet Ichang was suffering from cholera for more than two months before it appeared in Shashih.

With regard to the exact course of the epidemic in Ichang itself, details that can be relied on are not forthcoming. It commenced inside the city about the 10th April, then gradually spread outwards into the suburbs and the streets lying along the river bank. It reached the southern suburb, in which the Custom House is situated, in about a fortnight. In 10 days it ceased for a time in the latter neighbourhood, and was again heard of in the city. During May and June most cases occurred inside the city walls and in the island of Hsipa, which is separated from the mainland by a narrow junk channel. A good many cases also occurred about the same time among the boating population. About the middle of July it again made its appearance in the southern suburbs. Processions for the purpose of averting the disease were an almost daily occurrence during all this time. The last of these was on the 20th July, when the epidemic was practically over.

The symptoms of the disease in Ichang were like those described in India and Europe. People were attacked, in most cases suddenly, without any noteworthy premonitory symptoms, with purging and vomiting and great pain in the abdomen. The stools speedily assumed the rice water character; the face, fingers, etc., rapidly became shrunken; violent cramps in the muscles of the legs and hands quickly supervened; urine was suppressed throughout the attack; collapse set in; and death came on in a period varying from 12 hours to two days. The mortality during the first two months was excessive; indeed, I heard of no recoveries until towards the end of the epidemic. This excessive rate of mortality is not a characteristic of the disease in either India or Europe. No peculiarity of age, sex or condition was marked in those attacked, save that the poorer classes suffered the most. Cases of diarrhœa were not especially common at the time, so far as I could learn. In one case a man who came from Shashih when cholera had not arisen in that place was attacked within 12 hours after his arrival in Ichang, and succumbed to the disease. Four other people died in the same house

on the same day. This would make the period of incubation very short. Vomiting was not so striking a symptom as purging, but this may be due to the fact that, as a rule, in spite of the great thirst, patients did not drink much. Voice also, in such cases as I saw, though changed, was by no means lost.

As soon as the presence of cholera became known to me, I give the usual directions to the foreign community regarding attention to sanitary matters and the importance of not neglecting the slightest diarrhœa. I also laid stress on the duty of visiting servants' quarters. Refuse matter was removed from the vicinity of the Custom House; the drains were kept well flushed with water, and chloride of lime was laid down in them. I expressed my willingness to visit any cases occurring among the Chinese, and spoke about the necessity of cleanliness. However, I saw very few cases; and the natives confined their efforts towards abating the epidemic to going about in processions and burning joss-paper. Such cases as I had were characterised by the symptoms I have described. The treatment I pursued was to give laudanum at the outset, followed by ether as a stimulant. I found fomentations of hot water and turpentine very useful in relieving the painful cramps. In cases where reaction set in I gave some carbonate of soda with aromatic spirit of ammonia, and applied hot fomentations to the loins, to help towards the re-establishing of the urinary secretion.

In the first case, that of a Customs boatman, which came under my notice, I was not called in until the second day of the attack, and the favourable opportunity was over for treatment. The case was a very severe one, occurring as it did at the outset of the epidemic; and the patient was, besides, given some Chinese medicine. He died on the third day from collapse.

The next case I saw was that of an old fisherman, who was taken ill on the morning of the 4th May. I saw him three hours after the attack began, and found him in a state of agonising pain from severe cramps in the muscles of the legs, fingers and abdomen. He had passed 10 watery motions. I gave him a dose of laudanum, followed by a dram of ether; and during the day I administered some whiskey and water. The evacuations ceased and the cramps grew less severe. Next morning (5th May) he was much better; evacuations and cramps had entirely ceased; pulse was fairly good; no urine had been passed since the attack. He had some stimulants this day, and the treatment I have mentioned, of carbonate of soda, etc., towards re-establishing the secretion of urine. He slept well this night, and in the morning (6th May) he passed a small quantity of yellowish thick urine. On the day after he had a formed motion, and for two or three days he seemed to be on the way to recovery, as he was taking nourishment very fairly. However, he was much exposed to wet and cold in his sampan, from which he could not be moved, and he contracted a severe bronchitis. Weakened as he was by cholera, he succumbed on the 3rd June.

On the 13th July another Customs boatman was attacked with very severe pains in the abdomen, cramps in the legs, and vomiting and purging. He was treated similarly to the last case, and the evacuations ceased after the first dose of laudanum. Urine was passed on the evening of the second day. He rapidly improved, and was able to resume work on the 22nd July.

In some cases of choleraic diarrhœa laudanum effected a cure. In other cases to which I was called when the patients were in a moribund condition I was unable to do anything. During the epidemic 500 people were reported to have died (out of a population of 30,000), but the mortality was probably double that estimate.

I have mentioned the late occurrence of the epidemic at Shashih; with this town may be included the city of Ching-chou-fu, which is only a short distance from Shashih. In these towns no cases occurred until the last days of June. Much about the same time the epidemic

broke out in Chingmên, Hohsüeh and other places situated on the level plain which extends between the Han and the Yangtze. The mountainous districts seem to have escaped altogether. *For details concerning the epidemic in these places I am indebted to the kindness of one of* the members of the Roman Catholic mission, who was living in Ching-chou-fu at the time. He considered the disease there to be a mixture of cholera and typhus. The attacks were different: *in one class of cases vomiting and purging was very great; in other cases, very little. But* in the cases generally, in a few hours perspiration stopped, the skin became parched and burning, there was much headache, followed by delirium and loss of consciousness, and death occurred in a period varying from 12 hours, or even less, to three days. In Ichang most cases of cholera ended by collapse, causing death. The epidemic lasted in Shashih and Ching-chou-fu from about the 1st July to the end of the first week in September. During that time the mortality was extremely great, the number of people who perished being estimated by thousands. My informant would not assert that over 3 per cent. of those attacked recovered, and the number of people who were attacked was extremely great. In the towns situated on the Yangtze above Ichang the epidemic was also very severe, and the symptoms much resembled those described as having occurred at Shashih.

After cholera ceased in Ichang malarial fever became prevalent, and during the months of August and September the number of cases was astonishingly great, though the weather was fine and dry. No foreigners had the slighest symptoms at the time. Quotidian and tertian agues were the forms in which the malaria manifested itself. Quinine and cinchonine in very small doses proved effective in stopping the rigors and reducing the spleen. I had one *case of large abscess over the scapula the cure of which was impeded for some days by the* concurrence of malaria. The administration in this case of quinine and good nourishing food, however, soon reduced the temperature and banished the chills, and in 14 days after the opening of the abscess the patient was quite well.

METEOROLOGICAL TABLE.

Month.	Thermometer (Fahr.).				Barometer.		Rain.	
	Highest.	Lowest.	Average Highest.	Average Lowest.	Highest.	Lowest.	Rainfall in Inches.	Number of Days.
1883.	°	°	°	°	*Inches.*	*Inches.*		
April	77	49	68	59	30.32	29.51	3.63	11
May	82	60	72	65	30.18	29.69	7.30	21
June	89	68	82	72	29.95	29.69	5.02	18
July	93	71	85	76	29.87	29.58	14.31	20
August	92	73	88	76	30.06	29.68	5.76	8
September	93	61	78	70	30.37	29.77	2.58	14

Dr. P. MANSON's Report on the Health of Amoy for the Half-year ended 30th September 1883.

THE health of the port for the six months has been satisfactory.

There were three deaths, viz., two from cholera, and one—a child—from pelvic abscess.

Cholera prevailed during August and September in the large cities of Chiangchiu and Chinchiu, about a day's journey from Amoy, and also in villages much nearer at hand; but there never was the slightest suspicion of its being epidemic in Amoy. We were in constant steamer communication with Swatow and Foochow, where the disease raged all summer, and two foreigners who had contracted the disease in Swatow actually died in Amoy, one in hospital, the other on a steamer in the outer anchorage. Doubtless many Chinese also, both from Foochow and Swatow and the towns in our immediate neighbourhood, came here with the disease on them, yet there was no epidemic. I did not see a case of cholera originating in Amoy, nor did I hear of one. That Amoy is a suitable field for the disease was abundantly demonstrated by the epidemic of 1877. There has been no improvement in the sanitary condition of the town, which is as bad as possible, nor was there any other obvious reason why we should have been spared when our neighbours suffered so much. There was no quarantine.

During September and October a considerable amount of malarial fever prevailed among the Chinese.

Some years ago a large camp of Honan soldiers was established at E-mung-kang. I see many of the soldiers at the Chinese hospital, and have remarked that year by year the number of cases of what I believe to be a form of beriberi among them is increasing. I am sorry that my ignorance of their dialect, and the absence of interpreters, has hindered me from investigating this subject more thoroughly. The principal features of the disease are ataxy of the lower extremities; absence of the patellar tendon phenomenon and of foot clonus; presence of all skin reflexes; extreme tenderness of the muscles of the legs and thighs, especially of the calves, to pressure; no fever. The first cases I saw I put down as locomotor ataxy, and indeed the resemblance is very remarkable; but as they recovered it was evident this diagnosis could not be correct. I have seen cases in soldiers from Chiangchiu and Chinchiu as well as those from E-mung-kang, but all have been soldiers, and Honan soldiers. This is a subject well deserving careful investigation.

ON THE OPERATIVE TREATMENT OF HEPATITIS AND *HEPATIC ABSCESS.*

By PATRICK MANSON, M.D.

NOT many years ago, to tell a patient he had abscess of the liver was nearly tantamount to telling him he was about to die. It is true, recovery after operation, or spontaneous rupture, or, perhaps, absorption, did occasionally take place; but the proportion of such cases was so very small that liver abscess was justly considered an almost hopeless disease. But since the introduction of the aspirator, of the drainage tube, and of Listerism, the prospects in this disease have enormously improved; at all events, we need no longer stand by the patient with folded arms, concerned only with the euthanasia. We certainly can offer by surgical interference something more than a mere chance. I believe that by early and judicious operation and proper after-treatment the termination of hepatitis in abscess may be often prevented, and if abscess has formed it may often be cured. Of course this statement applies only to genuine tropical and unilocular abscess, and not to the multiple abscesses of pyæmia and dysentery.

The successful treatment of abscess, or of threatened abscess, in any situation depends often on *its early recognition. Especially must this be the case where the abscess occupies an important organ like* the liver; for if left unopened for a considerable time the destruction of gland tissue may be so great that enough may not be left for the purposes of the economy, and a lingering death becomes inevitable. Again, the longer an abscess is in existence the greater is the risk of rupture in some untoward direction, and the greater is the chance of pyæmia, hectic, diarrhœa, and the other consequences of retained pus. The probabilities of successful operation and recovery are very much diminished if the patient is much reduced by a long illness; therefore it is all-important that a hepatitis or liver abscess should be recognised and treated during the earliest stages.

The great secret in the successful diagnosis of hepatic abscess is to *suspect it.* There is no pathognomonic sign or group of symptoms. But systematic employment of the clinical thermometer; frequent percussion, mapping out and measurement of the liver dulness; the use of the stethoscope along the upper border of the hepatic region and over the liver itself in search of pneumonic crepitus, pleuritic friction or peritoneal friction; inspection of the tongue and excreta; the decubitus of the patient; the state of his skin and respiration; and his mental condition; these, and a careful study of the history of the case, will generally afford an *ensemble* of signs and symptoms which may lead to a correct diagnosis. The old classical picture of hepatitis is utterly wrong and misleading. In a few instances symptoms may be urgent and unmistakable, but in the great majority of cases so little urgent are local or general symptoms that often a patient with abscess actually existing in his liver will declare that he does not know he has got a liver. It is a great misfortune in the interests of the patient that so grave a disease gives rise to symptoms of so little urgency, at all events in its earlier and more remediable stages. Sometimes when symptoms are really of an urgent character they are of such a kind as not to lead to suspicion of abscess of the liver. I once had to treat a case of abscess which for months had been considered and treated as a case of ague, and the abscess was a large one. Rigors were a prominent feature, and on the strength of this quinine had been administered with a very free hand; not only that, but the patient was bound for the hot and relaxing climate of South Formosa to try change of air.

Often the only subjective symptom of abscess of the liver is a feeling of illness.

Given a patient who has been out of health for some weeks or months, whose range of temperature is from 100° in the morning to 102°, or a little over or under, in the evening, whose liver is perhaps only

slightly but still decidedly enlarged, and whose symptoms will not yield to remedies; if this patient has been resident for some time in a hot country, then, no matter how little apparent urgency there may be about his general condition, liver abscess ought to be suspected. Examinations ought to be carefully and frequently made, and every point in the history of the patient and in his present condition that might aid in diagnosis fully considered. If after this we come to the conclusion that he is suffering from hepatitis, and that this may have gone on to abscess, we are face to face with a deadly disease, and the question of the line of treatment we ought to adopt becomes a most critical one.

Before the introduction of the three important modern improvements in surgery I have alluded to, the cautious and expectant treatment so strongly urged by the great physicians of Indian experience of the last generation was undoubtedly the correct line to adopt. The indications for treatment in abscess of the liver are the same as the indications for treatment of an abscess anywhere else, viz., early and free discharge of its contents. This great principle was recognised by these physicians, but there were circumstances at that time which made its application all but impossible. The anatomical position of the liver, the danger of deep incision, the possibility of escape of pus into the peritoneal cavity, the danger of putrid suppuration and of gangrene, added to the difficulties of diagnosis and the frequent impossibility of localising the position of the pus, all combined to make operative interference so dangerous that the poor chance of recovery from spontaneous rupture was rightly preferred.

It is quite otherwise in our day. We can diagnose and localise an abscess long before it points; we can secure and maintain a free opening; and we can prevent the putrefaction of the abscess contents. This being the case, there is now no reason whatever why an abscess in the liver should not be treated in exactly the same way as an abscess anywhere else.

In some cases where symptoms are not urgent the temptation to delay active operative interference is very strong, and ought to be strenuously resisted. The fears of the patient and the doubts and disinclination to assume responsibility on the part of the surgeon both tend to dangerous procrastination. If, then, after a careful study of a case we come to the conclusion that abscess is present or may be present, these fears and doubts must be ignored, for it is clearly our duty at once—first, to arrive at a positive diagnosis, and second, if matter is found to evacuate it, using proper precautions for drainage and against putrefaction.

It is very easy to say what ought to be done, but it is not always so easy to do it. Cutting into the liver is not an operation to be lightly undertaken even by the most experienced surgeon, provided with the best assistants and most perfect instruments; how much more anxious and difficult must such an undertaking be to one perhaps quite inexperienced in this particular disease and operation, with only lay assistants to help him, with the whole paraphernalia of Listerism to attend to, and burdened with a sense of uncertainty about diagnosis and of responsibility which only those who have had to face such circumstances can really appreciate. It must often happen that in countries where tropical abscess occurs, the surgeon of some outport or lonely station has this to face. At such a time any hint is acceptable, and any method of operation that is simple and at the same time efficient is welcomed. Partly on this account, and partly because I believe the operation I am about to describe is much superior to those usually adopted, I venture to submit a plan of procedure I have found to fulfil all the important indications for the treatment of deep-seated abscess, but especially of abscess of the liver.

Some years ago I had the misfortune to have two cases of abscess of the liver which, owing to the great depth at which the matter lay, could only be treated by aspiration. In both cases there was no surface indication of the existence or position of matter, and in both cases it was only after I had plunged the aspirator needle three times in to its full length that the abscess was reached. The aspirator needle was nearly 4 inches in length. I should have been foolhardy to cut this depth into liver tissue, even supposing I had assurance that the peritoneal surfaces were adherent. I had therefore to content myself with frequent aspirations. Notwithstanding these, I had the mortification of seeing my patients gradually get lower and lower from hectic, bedsores and diarrhœa, till death ended

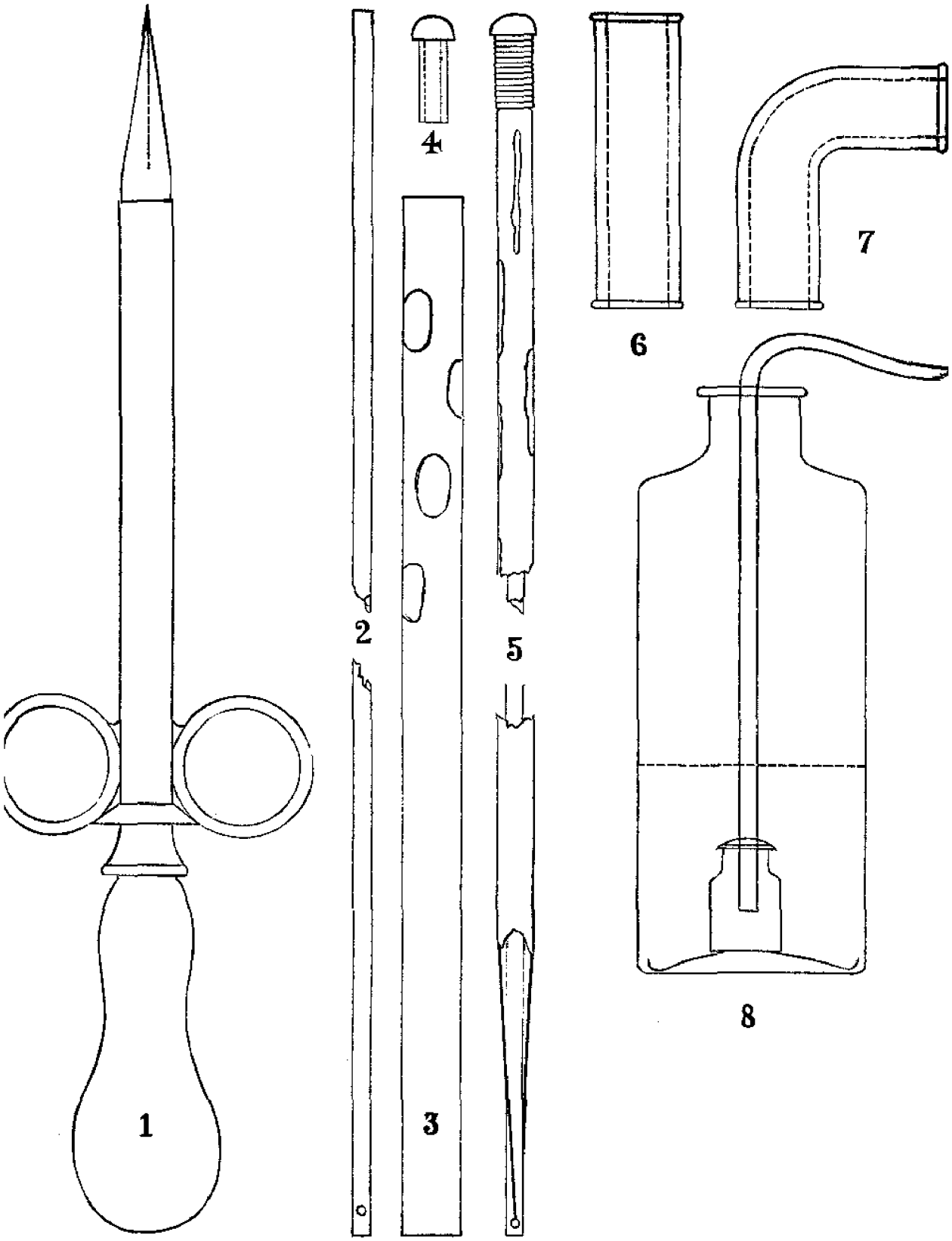
their sufferings. It occurred to me that could I have inserted a full-sized drainage tube into the abscess in either of these cases in such a way that pus could escape as soon as formed, the result might have been very different; and with this point in view I set about devising the following operation. I have practised it twice in liver abscess and once in empyema, and can confidently recommend it as an easy, safe and efficient proceeding. The apparatus necessary for its performance can usually be supplied by an ordinary operating case, and at a push, this might do; but it is better to have it specially made and adapted for the purpose in hand. The following is desirable, and ought, if possible, to be in readiness:—

1. A long, large-sized trocar provided with two eyes firmly soldered to the flange end of the canula. These eyes are for the accommodation of the fore and middle finger in withdrawing the instrument. Length of canula available, 4 inches; diameter, $\frac{3}{8}$ of an inch. (Fig. 1.*)
2. A steel stilette, 18 inches long and about $\frac{1}{8}$ of an inch in diameter, with a small eye to take a string at one end. (Fig. 2.)
3. Eight or 10 inches of stout rubber tubing with a bore of at least $\frac{1}{4}$ of an inch, and an outside circumference considerably greater than that of the canula. About 3 inches of one end of this tubing is perforated with large holes like an ordinary drainage tube. A stout silk string is run through the other end. (Fig. 3.)
4. A silver cap with a neck bored so as to fit loosely on to the end of the stilette and also allow the drainage tube to be firmly attached. The diameter of the cap must be less than the calibre of the canula. (Fig. 4.)
5. A piece of silver tube about 2 inches in length, having a bore just sufficiently large to admit with ease the rubber tubing. (Fig. 6.)
6. A piece of stout macintosh 18 inches × 14 inches. Carbolised gauze. These are firmly attached to the silver tube, a hole being cut in the centre of the macintosh and squares of gauze sufficiently large to admit the tube. These dressings are so lashed that one end of the tube is just flush with the inner surface of the gauze, and the macintosh lies on the outer side of the dressing.
7. Six feet of india-rubber tubing, having a bore of at least $\frac{5}{8}$ of an inch.

Before commencing the operation the perforated end of the rubber tubing is tied on to the neck of the silver cap. The stilette is run through the tube, and its end lodged in the hole made to receive it in the cap. The silk ligature at the free end of the tube is drawn through the eye in the stilette, and by means of it the tube is stretched so that its diameter is diminished sufficiently to allow it to traverse with ease the canula; the ligature is then firmly tied, maintaining the tube on the stretch. (Fig. 5.)

When these preparations are completed, and all instruments and dressings and the patient's side made thoroughly aseptic, the patient is put under chloroform, the spray is turned on, and we proceed to complete by means of the aspirator the diagnosis, and ascertain exactly the position of the pus if abscess does exist. If necessary, three or four punctures may have to be made. When matter is discovered a mental note must be made of its position and the exact direction taken by the needle. The needle is then withdrawn. After an incision through the skin, about an inch in length, has been made, the point of the hepatic trocar is placed in the puncture of the aspirator needle, and the instrument boldly pushed in the direction in which matter lies. Of course if the site of operation is in an intercostal space the ribs must be carefully avoided. As soon as the instrument is felt to enter the abscess the trocar is withdrawn and the abscess will discharge freely through the canula. When matter ceases to flow in full stream, and it may be presumed that all tension of the abscess walls is thoroughly relieved, the rubber tube, mounted on the stilette as described, is passed through the canula until the cap is felt to impinge on the posterior wall of the abscess. While one hand gently but firmly holds the stilette and tube in position, the other carefully and slowly withdraws the canula from the side of the patient, the fingers gaining the requisite purchase for the very considerable pull and half-rotating movement

* Diminished one-eighth in the woodcut.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required, from the eyes of the canula. The rubber tube is now tightly grasped by the tissues, and its perforated end lies in the abscess sac. While it is still firmly held at the bottom of the abscess the string keeping the tube stretched is cut, and the elasticity of the rubber causes it to resile towards the fixed abscess end and, expanding, firmly to block the wound in both liver and abdominal wall. The peritoneum is thus bridged across, and pus flows freely through the tube without any risk of escape by the side. The stilette is then withdrawn. The dressings, already prepared as described, are now to be applied, the end of the rubber tube being passed through the silver tube to which the gauze and macintosh are attached. To prevent unnecessary soiling of the dressings and bed, it is well to tie the end of the rubber tube before doing this. When the operator has satisfied himself that there is no kink on the drain and that the dressings are in position, lying firmly and smoothly on the skin, they are to be secured by two broad flannel rollers pinned with safety pins, the tube and drain emerging at the line of junction of the rollers; that is to say, there will be a thoracic and an abdominal roller, and the drain lies between them. When these have been thoroughly secured, the string tying the end of the drain is to be cut, and the drain and the metal tube in which it lies received into one end of the long thick rubber tube. This tube is firmly tied on to the metal tube at one end. It has already been filled with carbolic acid solution, which is kept from running out by clips or strings at the ends. The free end is now placed in a wide-mouthed bottle of a capacity of about 2 oz., and firmly secured in this.* The strings are now cut, and the end of the tube, with small bottle attached, is placed in a large bottle containing carbolic solution. (Fig. 8 explains the arrangement.) The syphon is thus complete, and the abscess contents are discharged as soon as formed by the tube and into the bottle. By raising or depressing the bottle the amount of suction may be increased or diminished as desired. A fall of about 18 inches is usually sufficient to ensure a steady drain.

When the operation is completed a large hypodermic injection of morphia ought to be administered, and a watch set to prevent the patient disturbing the dressings or tubes. Traction must be taken off the drainage tube and the metal tube by means of tapes attached to the proximal end of the syphon tube, and every precaution taken to prevent kinking or movement of the drainage tube at the point of emergence from the skin.

As no discharge can pass by the side of the drainage tube there can be no soiling of the dressings, consequently the patient need not be disturbed to have these changed for a week at least, or as long as discharge readily escapes by the syphon. But if discharge ceases or becomes suddenly very small, and the thermometer rises, the dressings ought at once to be removed and the tubes inspected, lest blocking either by discharge or kinking should have occurred. With tubes of full size and properly adjusted dressings no *contretemps* of this sort need occur, and the dressings may be left undisturbed for the time I have mentioned, or, if all is going on favourably, for longer. During all this time if the patient is at all restless it is well to keep him thoroughly under the influence of morphia.

By the end of a week the drainage tube will come to lie comparatively loosely in the wound, and by the collapse of the abscess sac and reduction of the size of the liver its direction will probably be considerably altered. It is perhaps advisable now to remove the dressings and make some alterations in the drainage tube. Prior to doing so a new set of dressings ought to be in readiness, with a new drainage tube of the same calibre as the original one, but without the silver cap, firmly tied to the end of the metal pipe. It is well now to have a bend on this pipe (Fig. 7), so that the syphon tube when attached may lie close to the patient's side and out of the way of his hands. When everything is in readiness the spray is turned on, the old dressings, with drain attached, removed, and the new drain

* The object of the small bottle at the end of the syphon is to prevent the entrance of air into the tube when the larger bottle is emptied of discharge from time to time. The small bottle must never be untied, but is lifted out with the tube when the larger bottle has to be cleaned or emptied. It thus acts as an air-trap.

slipped into its place. There is no difficulty in introducing the tube if it is done at once. The syphon tube is attached as soon as the bandages are secured.*

As long as discharge is copious these dressings ought to be continued. When the amount of pus becomes inconsiderable the syphon tube and metal bend may be dispensed with. The drainage tube is cut nearly flush with the skin, and secured against slipping into the wound. It will now discharge into an ordinary antiseptic dressing, which will have to be renewed often or seldom, according to circumstances. When discharge becomes so insignificant that we conclude the abscess sac has healed, the tube may be shortened little by little, care being taken that healing proceeds from the bottom of the sinus.

The advantages I claim for this operation are:—

1. The ease with which it is performed.

2. Skilled assistance is not necessary.

3. It is absolutely bloodless—no small advantage where a patient by long illness is reduced almost to the last extremity.

4. It is applicable to both very deep and superficial abscesses.

5. By means of the syphon action of the drainage tube the most dependent part of the abscess is as thoroughly drained as the highest. This important point is not met in the operation by incision, where bagging of pus is as a rule inevitable.

6. Antiseptics are easily and efficiently used.

7. In the operation by incision or puncture the dressings must be frequently changed, especially during the first few days after operating; in this operation a week may safely elapse without its being necessary to disturb the patient to dress him. This means an enormous saving in suffering and risk to the patient, and in trouble to the surgeon.

8. Liver pus is often so thick and viscid that it will hardly, unaided, flow through an ordinary drainage tube, and when it does get through, being forced out by accumulation in the abscess cavity, it coagulates into a sort of jelly and is not absorbed like ordinary pus by gauze dressings.† It thus tends to collect in a mass round the end of the drainage tube, effectually plugging this and preventing free discharge. This peculiarity of some kinds of liver pus is very remarkable, and is a great obstacle to successful treatment. But by the method of dressing I recommend this viscid coagulating pus is removed as soon as formed, and no blocking or obstruction occurs—the abscess is always empty.

9. In the operation by incision the patient lies in soiled dressings, and is in consequence uncomfortable and perhaps restless; by the syphon drain this is entirely obviated.

10.—In the operation I describe there is no danger to be apprehended from escape of pus into the peritoneum, and it is therefore a matter of indifference whether adhesions have formed or not. The canula, and afterwards the tube, are so thoroughly grasped by the tissues that leakage is impossible; and before the tube has become slack adhesions are likely to form between the peritoneal surfaces of the liver and abdominal wall. Besides, the abscess being always kept empty there is no pus to escape at the side of the tube; and, as a matter of experience, even when the tube has been weeks in position, not a drop of liver pus has ever soiled the dressings.

11.—It is manifest that an elastic tube is superior to the rigid silver canula that is sometimes used. The latter must tear the liver tissue in the up and down movements of respiration; this is a very extensive motion, as one can easily see by watching the motion of the aspirator needle when its point is buried in the liver.

* In changing the dressings, as soon as the syphon tube is removed it ought to be filled with carbolic solution and tied at both ends, and not untied till everything is secured and the free end of the syphon immersed in the carbolic solution in the small bottle.

† I have found in old mosquito nets an excellent substitute for gauze in these cases. The wider meshes of the net admit this thick pus more readily than does ordinary gauze.

Objections that may be raised to this operation are :—

1.—The elasticity of the tissues may be so great as to compress the rubber tube and block it. This I have not found to occur.

2.—As the ribs come together in empyema, or in liver abscess opened through an intercostal space, they will compress the tube. Once, for a day or two, in the case I am about to relate, this seemed to happen, but the obstruction was never complete, and very soon the edges of the ribs, where the tube pressed on them, apparently became absorbed, just as bone is under the elastic pressure of an aneurism.

3.—The difficulty of keeping the dressing in position. This undoubtedly is considerable, but can be met by care and contrivance. If insuperable, the ordinary dressing may be adopted and the syphon discarded.

4.—The necessity for special apparatus. I have done the operation with an ordinary large trocar and canula, an ordinary large-sized drainage tube, and the stilette of a No. 12 gum-elastic catheter. These are quite sufficient in empyema. In liver abscess, where matter may lie deep and be very viscid, larger and longer instruments are desirable.

I deem it not the least recommendation of this operation that, owing to its simplicity, and the ease with which it may be performed, and its applicability to all cases of unilocular abscess of the liver, whether deep or superficial, with or without peritoneal adhesions, surgeons who adopt it will use the aspirator in hepatitis sooner than they otherwise would have done. This has a double advantage: first, abscess, if found, will be treated from an early stage; and, second, it will sometimes happen that in prospecting for abscess a hepatitis, which left to itself would certainly have gone on to suppuration, will be cured. With only the operation by incision or trocar to fall back on, the surgeon will not prospect with the aspirator for matter until he is sure that, having found it, he can operate with some assurance that adhesions have formed, and that matter can be reached with safety. Thus it must often happen that dangerous delay in opening abscess occurs, and from hesitation to use the aspirator the curative influence of acupuncture in hepatitis is missed.

That the latter is no myth I am fully convinced. Puncture of inflamed lymphatics and of inflamed testicle is a recognised method of treatment of those diseases. Professor PALMER of Calcutta in every case of suspicious hepatitis explored the liver with trocar and canula as a matter of routine practice, and often with the best results, even although no matter was found. The puncture usually gave relief, and often cured, and had no bad consequences. I have never seen any bad results from puncture of the liver with the aspirator. There can be no question of the value of this instrument as an aid to diagnosis. The following case convinced me of its value as a *therapeutic agent*. In this case I am sure its use averted the formation of abscess, and this conviction is shared by the two medical men who saw the case along with me.

Hepatitis; threatened Abscess; Aspiration; Recovery.—A. B., æt. about 25; a tea-taster; three years resident in Amoy; indifferent constitution; irregular appetite; subject to constipation; had an attack of congestion or inflammation of the liver in the early part of the summer of 1881. This was treated actively, and on his recovery he made a short sea voyage. He returned in good health and went to work again. On 19th September he had a hard and hot day's work; in the evening, and before dinner, feeling very tired he shared a bottle of champagne with a friend. Next morning he felt ill. I saw him during the forenoon; he had fever, hepatic tenderness, colicky pains, foul tongue, headache, lassitude and the grouping of symptoms indicative of hepatitis. He was dry-cupped, purged, poulticed and put on low diet and full doses of muriate of ammonia. But in spite of very active treatment, symptoms persisted. The liver enlarged both upwards and downwards, tenderness was distinct, and there was some shoulder pain; the tongue became very foul; sweating occurred at times; to lie on the left side was impossible; there was considerable dyspnœa and much indefinable general distress. On the 24th, no improvement having taken place, large doses of ipecacuanha were given, and repeated next day, but without any appearance of doing good. On the 26th the breadth of the area of absolute liver dulness in the nipple line was 6 inches. On the 27th he went to sea for a few hours. No improvement resulted from the escape from the heat on shore, and during the afternoon he complained of a slight feeling of cold. During the next few days, in addition to the muriate of ammonia he had full doses of quinine. No material alteration

in his condition having occurred, and the weather in Amoy continuing to be very hot and distressing, he was sent to sea from the 29th September to the 3rd October. On his return, although there was no alteration in his general condition, the shape of the area of liver dulness had undergone a marked change. Perhaps it was somewhat narrower in the nipple line, but towards the epigastrium and umbilicus it had very much increased, and the swollen liver could now not only be felt there but actually seen as a distinct rounded elevation. In the recumbent position it was evident enough, but when the patient stood up it was most apparent. When the palm of the hand was laid on the globular swelling the connexion with the liver could easily be traced and the lump could almost be grasped. It was somewhat tender on pressure, and felt very hard. The patient's general condition was very threatening; much prostration, great indefinable distress, frequent sweatings, cold hands and feet, very foul tongue, dorsal decubitus, a low morning and high evening temperature, some dyspnœa; these, along with the local signs of hepatitis, and particularly the peculiar and defined bulging in the epigastrium above and to the right of the umbilicus, to my mind indicated impending abscess. On the 3rd October, at mid-day, temperature was subnormal, 97°.8; at 10 P.M. it was 102°.4. On the previous day a similar depression and elevation occurred. This behaviour of the thermometer was significant.

4th October.—At 3 P.M. punctured the liver in three places with large needle of the aspirator, driving it well home each time. Some blood aspirated, but no pus. Two of the punctures were made in the epigastric swelling, the needle being carried backwards, upwards and to the right; the third puncture was in the axillary line, just inside the false ribs, and ran upwards, backwards and inwards. Before the patient came out of the chloroform a morphia injection was given. Operation followed by sweating, great fall of temperature and some appearance of collapse, but pulse continued fair. At 6.30 P.M. there was considerable pain in the liver. Temperature, 96°.9; stimulants and nutritive enemata. At 9 P.M. temperature had risen to 97°.7; pulse, 64 to 78; there was considerable abdominal pain and much sweating; morphia again injected.

5th October.—7 A.M.: pulse, 90; temperature, 100°; skin feels warm, but there is no sweating; feeling of nausea, but no vomiting; had five hours' sleep; bowels opened by warm water enema. 3 P.M.: temperature, 100°.3. 9 P.M.: chloroform nausea still continues, but there is no vomiting, and he has taken a considerable amount of nourishment; moderate sweating; pulse, 94; temperature, 101°.2.

6th October.—Slept well during the night, but sweated considerably; vomited once, and still feels chloroform nausea; afraid on this account to take food. Nutritive enema given. Liver less tender, and he can now lie on his left side. Epigastric swelling very distinct. 9 P.M.: a fair day; nausea less; food taken; pulse, 82; temperature, 99°.9; sweats less.

7th October.—Slept well during the night, although at 2 A.M. complained of some liver pain; tongue is cleaning. Temperature at 2 A.M., 99°.3; at 7 A.M., 98°.7. Liver area decidedly smaller; epigastric tumour subsiding; tenderness almost gone. 10 P.M.: a fair day; complained of feeling chilly towards evening; nausea nearly gone; food is now well taken.

8th October.—7 A.M.: slept six or seven hours last night, but this morning does not seem quite so well; the liver tumour is barely visible; it can be felt, however, and is still somewhat tender; percussion dulness much less extensive. 6.30 P.M.: copious action of bowels from enema and Friedrichshall water; tongue not much improved; slight liver pain; some appetite.

9th October.—Did not sleep so well; tongue cleaning posteriorly, the fur peeling off, leaving raw, red surface. Bowels again acted on by enema and saline. 9 P.M.: feels much better; liver smaller; no nausea now; no sweats; appetite improved.

From this time he steadily improved. On 13th October I note: tongue nearly clean; liver much less, almost corresponding to costal border; epigastric swelling almost gone; percussion in this region quite tympanitic.

His diet was now improved, and he steadily gained strength, losing all liver symptoms. On 17th October, being quite convalescent, he went to Shanghai. The liver area was still larger than normal, and an unevenness of the edge of the liver could be made out where the lump was, but his general condition was entirely satisfactory, and all acute symptoms of liver disease were at an end.

He was under Dr. JAMIESON in Shanghai, and steadily improved, gaining weight, and his liver swelling altogether subsiding. On his return to Amoy in November he had a slight threatening of dysentery, but milk diet and one or two doses of ipecacuanha checked it, and he continued quite well till the spring, when he went to England. He is now quite well.

Suppose in this case I had found matter, could I have ventured to incise or puncture the liver in the usual way? I think not. But because I had the operation I have described to fall back on, and which I went to the case prepared to perform, I had no hesitation in prospecting for pus. Had I only had the

old operation in reserve I should not have used the aspirator at so early a period—not until I thought that pus was likely to be found. By that time the likelihood of recovery would have been reduced enormously. On the chance of finding pus, and, failing this, in the hope of curing the hepatitis, the aspirator was used; with the result that pus was not found, and abscess was averted.

In the following case the time had passed when any therapeutic effect could have been expected *from the use of the aspirator. It proved, however, that abscess had formed, and indicated the exact position* of the pus. The operation described was performed, and but for the unusual and perhaps altogether unique complication of complete biliary fistula, it would certainly have succeeded in completely curing the patient. Whatever the ultimate result of the case may be, it is a strong argument for the efficiency of the operation and the system of drainage recommended, that the patient recovered from the abscess notwithstanding its great size, the extensive destruction of liver tissue and the enormous drain of 30 ounces of bile per diem.

Hepatitis; Abscess; Operation; Syphon Drainage; Biliary Fistula.—C. D., æt. 34; a tea-taster; 15 years resident in China, principally in Amoy.

Ten years ago had pleurisy with effusion; recovery was perfect. Within the last five years has had two attacks of subacute dysentery, the last over two years before the commencement of his present illness. Has had, many years ago, intermittent fever; and for some years has been liable to attacks of a sort of nondescript fever, especially during the hot weather.

He has always lived well, and seldom took much exercise. Latterly he put on flesh. He *told me* he *enjoyed* excellent health during last winter, until February, but since then he has never felt well. Nearly every day he had attacks of fever, accompanied by great languor, unfitting him for work, so that most afternoons he had to leave his office and go to bed. He took large quantities of quinine, without the slightest appreciable effect on the fever. Drastic doses of blue pill gave decided relief for a day or two, but their effect was evanescent. Once or twice he had exceedingly *severe pain in the epigastrium, which he considered arose from indigestion, and treated it accordingly. During the* attacks of fever the temperature rose to 102° or 103°; there was no rigor, and no distinct sweating.

I saw him on the afternoon of the 22nd July, that is, quite five months after he began to feel ill, when he gave me the foregoing history. He was in good condition as regards fat; had a clear, healthy complexion and eye; a tongue slightly furred; and a temperature at 7 P.M. of 103°.2. The liver was enlarged, but not to a very great extent. His right side felt uneasy, but he could lie in any position without particular discomfort, and complained of no pain of a decided character on palpation or percussion. He was worried with a dry cough, which, however, he said had been troublesome off and on for a good many years. Next morning the temperature had fallen to 99°.8.

The persistent, long-continued fever of a low type, unassociated with marked rigor or diaphoresis, and uninfluenced by quinine, together with the uneasiness and slight enlargement of the liver, and the absence of anything else to account for the fever, led to a diagnosis of hepatitis.

He was put on low diet; a saline purgative every morning, blue pill every second night, full doses of muriate of ammonia, and rest in bed were prescribed. Large poultices were applied night and day, changed every two hours, over the liver. After six days of this active treatment and careful dieting the temperature had fallen gradually to 98°.5 in the morning and 101° in the evening.

On the 29th July, without error in diet, exposure or satisfactory reason, the temperature began gradually to rise till it got over 102° in the evening and 99° in the morning. In six days it fell again to 100° at night and 98°.5 in the morning. On the 4th August the morning temperature was as low as 98°.4. But again the temperature rose, and on the 5th and 6th it stood in the evening at 103°.6. It fell again, however, and on the 9th was nearly normal. The *patient was then sent to sea for a short voyage, and for three days did very well; but after this short spell of normal* temperature, fever gradually returned, and when, after an absence of five days, he got back to Amoy he was as bad as ever. On the 21st August the evening temperature stood at 103°.3.

As regards local signs, the nipple line absolute dulness on the 30th July amounted to 4 inches, and a certain amount of pain could be elicited by percussion over a small area to the right of the middle line in the epigastrium, and the patient was himself conscious of slight pain at a spot a little above the cartilages of the ribs, about the eighth interspace; also at times he had slight uneasiness about the angle of the scapula. On the 1st August the pain at the *costal border had disappeared, but the spot in the epigastrium was still sensitive.* The nipple dulness was now only 3½ inches; on the 6th August, however, it had increased to 5½ inches, and distinct friction could be heard over a

narrow area just external to the nipple line, and extending from the upper to the lower border of the liver dulness. On the 9th August this friction was still audible, but by the 18th it had disappeared. On this date the nipple line dulness had increased to 6 inches. On the 20th a small patch of very fine crepitus, elicited only by deep inspiration, was made out at the upper border of the liver dulness, just external to the nipple line. This crepitus, the area of which was completely covered by the chest piece of the stethoscope, persisted.

Prior to this date I had suggested the advisability of exploration of the liver with the aspirator, but my suggestion received no encouragement. Feeling now quite certain about my diagnosis, and as to the probability of the existence of abscess, I strongly urged my patient to permit aspiration; but he was timid and would not, persistently shutting his eyes to his condition. It was evident that there was something more than mere congestion or inflammation in the liver. The repeated relapses of fever, notwithstanding most careful dieting and treatment, pointed to some permanent structural lesion. The pulse, too, was rising, though the tongue kept clean, and the complexion and general condition pretty satisfactory. It was impossible to convince the patient that his liver was seriously implicated.

So the case went on till the 5th September. A morning temperature of 99° to 99°.5, and an evening temperature of 102° to 103°; liver enlarged; crepitus, as described, distinct; pulse ranging from 80 to 100; tongue clean; bowels acting to pills or salines; appetite fair; no jaundice; no troublesome pain, dyspnœa or other symptom; the patient moving from bed to couch, and about his room, and feeling fairly well. Periodical suggestions of aspiration were steadily declined, or postponed.

On the 5th September, after some milk and egg, he vomited. This was some time during the forenoon. Being exhausted by the vomiting, he slept. On waking he felt cold, and covered himself with a rug. Presently fever set in, and rapidly increased till by 5 P.M. the thermometer stood at 106°, the pulse 140, respirations 40, and he was slightly delirious. This high fever lasted but a short time; it fell by lysis of gentle perspiration. His condition now speedily became worse. Prostration was very decided; night sweats profuse; extremities cold; bowels irregular; naturally clear complexion became muddy and dirty; mind at times clouded; evening temperature sometimes 104°; pulse from 100 to 120, and on one occasion 140; some dyspnœa and "catching" of the breath. On the 13th September physical examination showed extension of liver dulness in all directions; in the nipple line it was quite 7 inches, and there was very marked epigastric fulness. No evidence of local bulging or pointing could be seen or elicited by percussion.

He was now reluctantly persuaded to submit to operation, and on the 14th September the operation described above was performed, the point selected for puncture being the eighth intercostal space, about 1½ inch from the costal border, midway between the nipple and axillary lines. Matter was discovered by the aspirator at a depth of 2 or 3 inches. On the introduction of the hepatic trocar 20 ounces of pus escaped. The drainage tube was then inserted, the cannula withdrawn, strings cut, stilette removed and antiseptic dressings applied. The syphon was not used. On redressing some hours later it was estimated that about 10 ounces more pus escaped or had collected on the dressings. The capacity of the abscess may therefore be set down at quite 30 ounces. The pus was gummy, dark chocolate brown, with specks of what looked like necrosed liver tissue floating in it. It coagulated spontaneously.

On the evening of the operation the temperature fell to 97°.6, and the pulse to 90, but both gradually rose till on the 26th September the temperature was 104°.3 and pulse 154. As there appeared to be some irritation about the tube on the 20th, a smaller-sized drain was introduced. On the 26th the full-sized drain was replaced, and passed for 8 inches into the wound. Discharge now escaped freely, and both pulse and temperature fell. His mental condition also improved, his tongue cleaned, and his appetite became excellent. On 1st October I note that I aspirated through the drain, and removed about an ounce of residual discharge. This aspiration I repeated daily for some time. Bile in small quantities had been observed mixed with pus and liver *débris* almost from the time of the operation, but on the 2nd October the quantity was notably increased, and for the next fortnight constituted about half the discharge. On the night of the 13th October I was sent for in a great hurry; the patient had been bleeding, and blood had escaped from under the dressings. These I removed at once under the spray, and found a large coagulum—quite 8 ounces—evenly spread out on the under surface of the gauze; but the bleeding had stopped, the tube was patent, discharging bile and pus, and there was no indication as to where the blood had come from. Next morning the patient was pale, but otherwise not much altered. On the morning before the bleeding he weighed 125 lbs.; a week afterwards, and notwithstanding the loss of blood, he weighed 2 lbs. more, viz., 127 lbs.; his pulse was 120, and his temperature ranged from 99°.5 to 101°. On the whole he was gaining ground, and bade fair for complete recovery.

On 16th October I washed the abscess out with a solution of salicylic acid. In the washings, and also blocking the tube, I remarked some pieces of firm sloughy material. On the 19th the amount of pure bile in the dressings and in the discharge had notably increased. Day by day the quantity of bile increased till the dressings every morning were thoroughly saturated with it, overpowering the odour of the carbolic acid, and nauseating, by its

heavy mawkish smell, the patient and his attendants. On 30th October, after the tube had been removed from the side at the afternoon dressing to clean it, the patient being directed as usual to cough, two pieces of sloughy membrane, each measuring about 1¼ inch × ¾ inch × ⅛ inch, with ragged edges, were forced by the succussion of the cough out of the wound. In my note I query,—gall-bladder? Next day a larger amount than usual of brown, gelatinous, sticky muco-pus was found in the dressings, in addition to the saturation by bile. Bile had disappeared from the fæces as early as the 24th, and did not reappear there again.

The discomfort from the smell and dampness of the bile-saturated bandages was so great that on 2nd November I rigged up a syphon on the principle I have described above. From that date the patient's condition was very much improved as regards comfort, all discharge and bile passing along the tube and into the bottle. Daily dressings were no longer needed. Once a week was quite sufficient, and even then dressing was only necessary as a precautionary measure and to readjust the bandages. There was no discharge in the gauze, or at most a few drops. After the syphon had been in operation a day or two, the temperature, which for three weeks had ranged from 99°.5 in the morning to 101° or so in the evening, fell, and remained permanently below 100°, usually about 99°.5. The pulse, too, dropped from 120 to 108, and altogether the condition of the patient was decidedly improved. By the first week of December a further steady fall of temperature took place, and it ranged from 97°.8 to 98°.8, the pulse beating about 100. The muco-purulent discharge had diminished very much, but the discharge of bile was enormous, upwards of 30 ounces every 24 hours.

On the 6th December he weighed 108 lbs. on a rough estimate; appetite was excellent; tongue clean; bowels opened regularly every morning; sleep sound and sufficient; no night sweats; altogether, but for the biliary fistula and the weakness the enormous discharge entailed, he was in good health. Unfortunately, he had contracted the morphia habit. Since the operation he had hypodermic injections daily, and at this date he had 1 grain every evening, and ½ a grain every morning. It soothed him very much, and I did not consider it advisable to insist on discontinuing the habit in his then weak condition. The only bad effect I saw from the morphia was a certain amount of nervousness and despondency before the morning injection.

24th December.—In the course of a few days the patient will leave for America. The discharge of bile by the syphon still goes on, and with it there is always a certain amount of muco-pus—about 3 ounces—every day. Percussion over the site of the abscess yields a well-marked amphoric note. The area thus resonant may measure about 8 inches horizontally by 3 inches vertically. Evidently there is still a large cavity, but as long as the syphon is in place it is kept empty of bile and pus. There is no smell of decomposition about the discharge; the temperature has been normal for a month; the appetite is excellent; tongue clean; and in every respect, except for the escape of bile from the side and its absence from the stools, and the progressive wasting—he now weighs only 98 lbs.—the patient is in good health.

Whatever the ultimate termination of this case may be, nature has had every opportunity of effecting repair. Surgery can do no more than this. The occurrence of complete biliary fistula must not be looked on as a consequence of the operation, but as an unavoidable complication; and the fact that the patient has survived so long under most disadvantageous circumstances is a strong argument in my mind in favour of the particular operation and method of dressing practised in this case.

Shortly after the temperature became normal I made some observations on the secretion of bile in this patient. Cases of complete biliary fistula in man are rare, and our knowledge of the quantity of the biliary secretion and its relation to food is almost entirely derived from experiment on the lower animals. These observations of mine, therefore, crude though they are, may be found to possess some value for the physiologist.

As circumstances that might affect their value, I may mention that during the entire period in which they were made the temperature of the body, as indicated by the thermometer under the tongue, and used three times a day, viz., at 9 A.M., 4 P.M. and 7 P.M., was normal, ranging between 97°.8 Fahr. and 99° Fahr. The pulse beat about 100 per minute. Two semi-solid stools, entirely devoid of bile, were passed every morning with the utmost regularity; sometimes the action of the bowels was preceded by colicky pains, but there was no diarrhœa. Food of the ordinary character, with a plentiful allowance of milk, was consumed at the hours indicated in Table II; the appetite was excellent. Two hours after eating, 5 grains of inspissated ox-gall, made up into a pill, was taken three times a day. At 4 P.M. he had a hypodermic injection of 1 grain of morphia, and at 9 A.M. another of only ½ a grain. The patient

employed his time in conversing or reading, lying on his bed or sofa. As mentioned above, on the 6th December his weight was put down at 108 lbs.; on the 21st December it was carefully taken, and then ascertained to be 98 lbs. The discharge from the side was carried by the syphon tube into a graduated glass measure, in which the quantity could be accurately measured.

The discharge consisted of two parts: first, pure golden-brown bile; second, a sort of muco-pus, which coagulated after discharge, and resembled much the muco-pus of cystitis. Mixed with this were at times streaks of reddish and brownish tinted materials, suggesting blood and liver tissue. I estimate that the amount of muco-pus and matter other than bile amounted to 3 or 4 ounces in the 24 hours; so that from the figures I give, this quantity must be deducted to arrive at a correct estimate of the bile secreted.

Table I gives the amount of urine and bile secreted every 24 hours from the 26th November to the 22nd December.

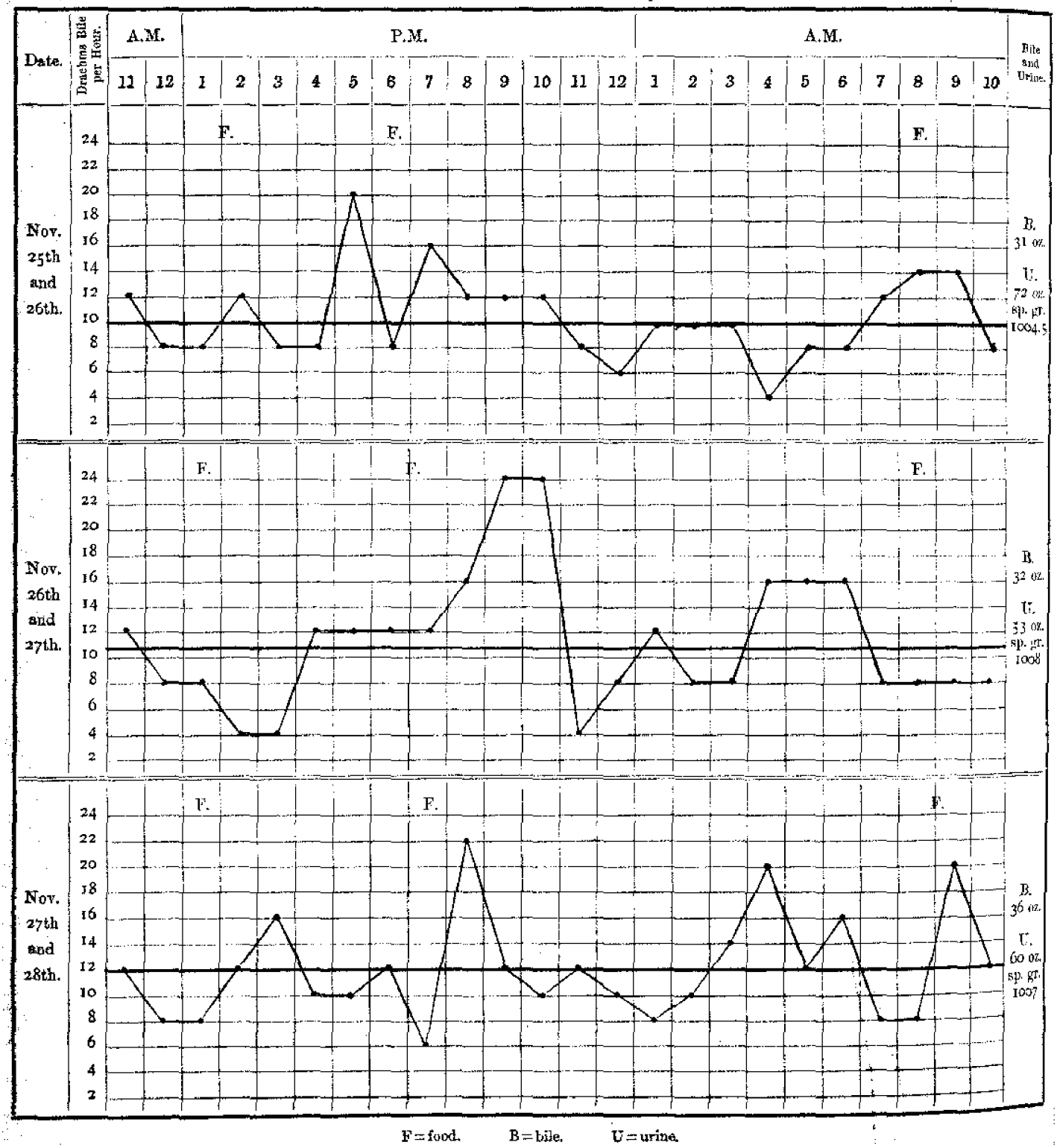
Table II is constructed from a series of observations on the quantity of bile secreted every hour during five days. The figures along the top register the hours; those in the second vertical column indicate the number of drachms discharged. The thick line indicates the average quantity secreted per hour each day; and the zig-zag line the actual amount secreted every hour. The letter "F." indicates a meal.

Dr. BRETON of the *Triomphante* very kindly examined the urine for me on several occasions, and twice made a careful estimate of the proportion of urea present. On the 16th December the urine contained 9.66 grammes of urea per litre, and on the 19th about 9.60. In the urine of the 16th bile was present in considerable quantity, but completely absent from that of the 19th, 20th and 21st. Chlorides always abounded, and once a trace of sugar was found. Albumen was entirely absent. Reaction and colour were always normal.

TABLE I.—AMOUNT of URINE and BILE secreted in 24 Hours.

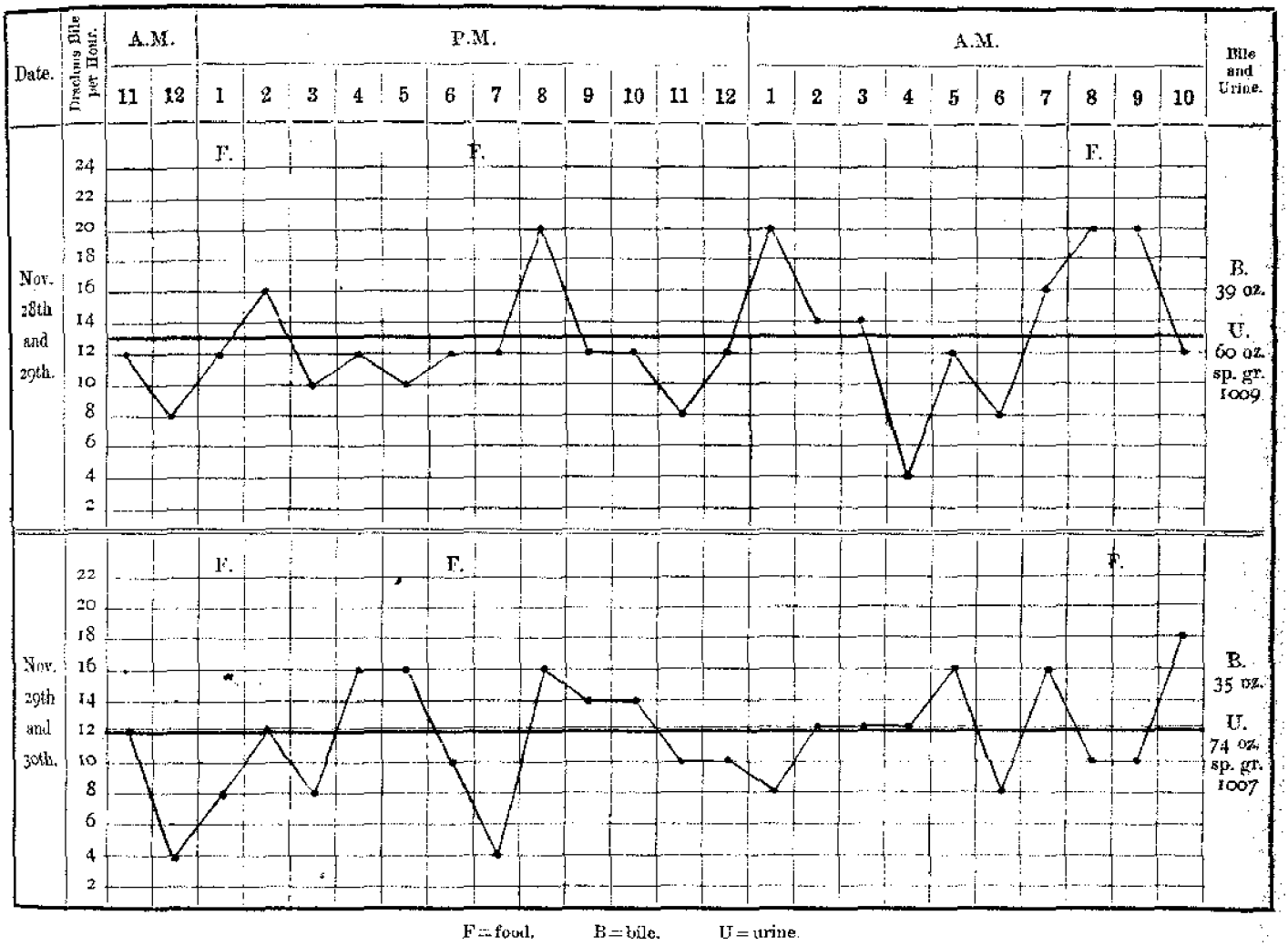
DATE.	URINE.		BILE.	REMARKS.
	Amount.	Specific Gravity.	Amount.	
	Ounces.		*Ounces.*	
November 26th	72	1004.5	31	
„ 27th	53	1008	32	
„ 28th	50	1007	36	
„ 29th	60	1009	39	
„ 30th	74	1007	35	
December 1st	62	1010	33	Patient drinking less after this date.
„ 2nd	62	1010	33	
„ 3rd	62	1010	32	
„ 4th	42	1018	33	
„ 5th	38	1016	34	
„ 6th	50	1012	29½	
„ 7th	47	1016	33	
„ 8th	44	1016	33	
„ 9th	62	1013	32	
„ 10th	40	1015	29	
„ 11th	10	1022	32	
	20	1013		
„ 12th	48	1013	33	
„ 13th	41	1014	28	
„ 14th	51	1013	21 ?	Part of bile lost.
„ 15th	49	1015	30	
„ 16th	52	1011	30	
„ 17th	28	1014	28	
„ 18th	30	1012	30	
„ 19th	41	1012	30	
„ 20th	40	1012	30	
„ 21st	38	1012	35	
„ 22nd	50	1012	33	

TABLE II.—SECRETION of BILE per Hour.



F = food. B = bile. U = urine.

TABLE II.—*Continued.*



F = food. B = bile. U = urine.

From these tables we may infer—first, that the average secretion of bile in a man weighing about 100 lbs., eating heartily of ordinary food and taking no exercise, is over 28 ounces in the 24 hours; second, that the rate of secretion is very irregular, and has no apparent relation to the hours of eating; third, that in this case the escape of bile was in some measure vicarious of the urinary secretion.

Dr. D. J. Macgowan's Report on the Health of Wênchow for the Half-year ended 30th September 1883.

It is remarkable that although this port has repeatedly suffered from Indian cholera since the first invasion of China by that disease, it this season entirely escaped, up to the end of the period under review,* and that although the disease has prevailed elsewhere from *Canton to Newchwang and from the seaboard to Ichang or further west.* There would be nothing report-worthy but for the occurrence of a case of poisoning from the use of porpoise as food, and for opportunities that have presented of testing the value of musk, so much lauded by the Chinese as a therapeutic agent.

A member of the Customs staff, who for several years suffered from rheumatism, and had become well-nigh saturated in Formosa with potassium iodide, and cinchonised withal for malarial fever, was lately attacked by lumbago, and, after suffering 10 days, made application for treatment. He had been taking *his medicine, and had abraded the entire lumbar region by turpentine frictions. For four nights the* severity of the pain had prevented sleep. I applied the common Chinese musk plaster (which contains but a pinch of musk), adding to it 4 grains of that drug in a tolerable state of purity. In two hours the patient fell into a quiet sleep; in the morning the pain was barely perceptible, and in three days it wholly disappeared.

About the same time I treated a sprained ankle of a foreign resident in the same manner.

The application was made about 11 hours after the injury. There was extensive tumefaction and intolerable pain, such, in fact, as always attends severe accidents of that kind. Ten hours after the application the pain subsided so far that the patient fell asleep, and in the morning the joint was painful only on pressure. On the fifth day walking was partially resumed, and in a few days more the only trace of the injury was a stiffness of the joint, which continued much longer. The lividity from rupture of vessels lasted five weeks, indicating the severity of the lesion.

Chinese tell of severe cases cured in less time. This case would not have yielded to leeching, embrocation or other modes of treatment in one quarter of that period of cure.

Although musk has been long well known in the West, it seems worth while to translate what Chinese writers have to say about it. There are two sources of supply, the *Moschus moschiferus* (musk-deer), from the western provinces, and the *Viverra civetta*, or civet cat, *common in Central China.*

The musk-deer is found throughout the mountains of Yünnan, Szechwan and Thibet. It is a timid little animal, and often dies of fright. It feeds on juniper leaves and reptiles; snake bones are found in its stomach. In spring its glandular pouch is greatly swollen and inflamed. The secretion is discharged with the urine. Musk-deer always resort to the same

* A fortnight later cholera in a most virulent form appeared, and prevailed for several weeks, but not extensively.

place for urination, covering their urine with earth. In such places deposits of a superior quality are found, amounting sometimes to 15 catties.

A native traveller recently gave the following account of the animal:—

It is in the habit of throwing itself down on the ground in an exhausted state, in order to cool itself and to seek relief from the itching felt round the orifice of its glandular pouch. This emits a very rank odour, and thereby attracts numerous ants, which crawl in and feast upon the highly flavoured secretion. The animal shortly feels relieved by the scratching of the ants, closes the opening by a sort of sphincter, shuts up the ants, and makes off. This operation is repeated day after day, at the expense of the unwitting ants, during the life of the buck (for no musk is obtained from the doe), until a hard, india-rubber-like mass is formed in the distended pouch.

The article, however, which is most prized is that which falls from the musk-deer on the ground, and is gathered in grains that are precious as pearls. This is so pungent that if carried through a garden or woods it prevents fructification. The poisonous effect of fresh musk on vegetation is shown also by the blighted appearance of places which the musk-deer selects for its convenience. For some distance there is an absence of plants, and farther off, leaves exhibit a yellow tinge. Some plants are more susceptible to musk than others, the lichee fruit tree *(Nephelium litchi)* is particularly obnoxious to it. If brought too near the nose it causes inflammation, followed by the appearance of white worms in the nostrils.

It is recorded that a peculiar species, caught by a fisherman, was kept in the imperial garden (A.D. 742–55). Its pouch on being pricked emitted such a strong kind of musk that a single drop in over a gallon and a half of water rendered that fluid so odoriferous that garments sprinkled with it had an ineffaceable perfume. The incised wounds, which were made for obtaining the secretion, were healed by the application of arsenic bisulphide. It is directed that musk which is found in lumps mixed with the blood in the heart of animals that die from fright is not to be employed in medicine; that is, not to be administered internally. Hunters of the musk-deer using its flesh for food never suffer when bitten by the most virulent snakes. Snake-hunters—snakes are pursued because of their attacks on fruit trees—place a bit of musk under the nails of the big toes, which is an unfailing prophylactic.

This valuable substance no sooner leaves the hunter's hand than skilful manipulators adulterate the article for wholesale dealers, who adulterate it for the trade, when it is found to possess about 10 per cent of genuine musk. Fortunate, indeed, are those who obtain the drug having that degree of potency. A genuine musk-bag may be known from the hair internally. False bags are made of the abdominal skin of the musk-deer, and stuffed with the genitals of the civet cat and matters that are undistinguishable.

It is incompatible with alliaceous food; too long carried on the person it induces unusual forms of disease. It expels whatever is noxious in the system, including demoniacal influences; it is an anthelmintic, and cures the bites of venomous serpents; and is fatal to certain plants. Wind that has entered the bones (rheumatism) is expelled by it, but when wind gets between the skin and the flesh, musk, if taken, will drive it into the bones, and the pain is increased. When given for restoration from a swoon, it is to be discontinued as soon as the patient revives. It may be administered with advantage in indigestion from eating fruit. It is to be

used when diffusible stimulants, not tonics, are indicated. It is given in fevers of every type, and in tedious parturition. Popularly, it is believed to possess great power as a fœticidal agent, being applied by perpetrators of that heinous crime to the umbilicus, potions of liquor being drunk at the same time. As a calmer of the spirits it is much employed; laid on the pillow it favours pleasant dreams and averts nightmare. It has the effect of ammonia when there is prostration of the vital powers. Externally, it is employed in piles, and is in universal use for plasters, the base of which is composed of wax and resin. They are thick and very adhesive. Druggists who charge their articles with a liberal quantity of the penetrating drug render their plasters highly popular. Shanghai plasters, for this cause mainly, are in general demand.

The analogue of the musk-deer in the secretion of odorous matter is the civet cat, which is found in the central and southern provinces, throughout the Nanshan range. The feline and vulpine appearance of this member of the *Viverridæ* gives it the name in Chinese of "mysterious cat," "fragrant fox," and "supernatural fox," which they describe as hermaphrodite. The pouch and genitals are removed for procuring the secretion, which, to the uninitiated, is palmed off as musk. In a notice of one of these animals obtained from China in 1683, M. POMET, in his *history of drugs*, states:—

> Having kept this creature some days, I perceived that the walls and bars that enclosed it were covered with unctuous moisture, thick and very brown, of a very strong and disagreeable smell, so that during all the time that I kept this animal I took care to gather the civet out of the pouch every other day, and not without some trouble and hazard, because it put the creature to some pain or apprehension of it; and having done so for months, I had the quantity of an ounce and a half; but it is certain that if the necessary care had been taken, and the beast could be hindered from rubbing itself, I might have got a great deal more.

The Chinese do not keep the animal for obtaining civet, but kill it, cut out the genitals, sprinkle them with liquor, and dry them in the shade.

Besides its use as a medicine, musk is largely consumed in perfumery. The total amount produced is approximatively discoverable from the Imperial Maritime Customs Returns, which for 10 years ending 1882 show exports amounting to 329.38½ piculs, valued at *Hk.Tls.* 2,520,364. It will be perceived from the following table that Hankow is the chief mart, that port being nearest (except Ichang) to the source of supply. Tientsin musk is said to be a product of Chihli, but probably Shansi furnishes the greater part.

EXPORT of each PORT for TEN YEARS.

Shanghai	*Piculs*	43.61$\frac{3}{16}$	= *Hk.Tls.*	375,527
Canton	,,	5.87$\frac{7}{8}$	,,	26,638
Hankow	,,	218.30$\frac{3}{16}$	,,	1,731,581
Tientsin	,,	27.46$\frac{10}{16}$	,,	191,047
Ichang	,,	34.13$\frac{1}{2}$	,,	195,571
TOTAL	*Piculs*	329.38$\frac{1}{2}$	= *Hk.Tls.*	2,520,364

TOTALS for each YEAR.

	QUANTITY.	VALUE.			
	Piculs.	*Hk.Tls.*			
Total 1873	21.23½	118,218,	averaging about *Hk.Tls.*	56	per catty.
„ 1874	24.64½	148,239	„ „	60	„
„ 1875	25.23¾	164,288	„ „	65	„
„ 1876	25.03¼	209,469	„ „	84	„
„ 1877	57.53$\frac{1}{16}$	479,095	„ „	83	„
„ 1878	42.85$\frac{15}{16}$	374,246	„ „	87	„
„ 1879	37.84½	267,056	„ „	73	„
„ 1880	41.28	283,016	„ „	69	„
„ 1881	23.61	202,802	„ „	86	„
„ 1882	30.11	273,935	„ „	91	„
Total for 10 years, 1873–82 . . .	329.38½	2,520,364	average value for 10 years about	*Hk.Tls.* 76	per catty.

There are no data for estimating the consumption in China, or the extent to which the foregoing amounts were adulterated.

DRIED MUSK-BAG OF THE MOSCHATA (?), YÜNNAN. (Average size as found in the shops.)

POISONOUS ANIMALS.

Porpoise.—The case of poisoning by eating porpoise (referred to above) did not prove serious, but as death often results from that cause, a summary of Chinese observations on the porpoise may be worth putting on record in these Reports.

The porpoise occupies greater space by far in Chinese ichthyology than any fish. CH'ÊN'S *Cyclopædia* quotes 30 authors who refer to it. Few fishes are so prized for their flavour, and none so much condemned for poisonous qualities. Like English, German, French and other maritime people, the Chinese name the animal from its resemblance to a pig,—it is the *ho-t'un*, "river pig." It enters the rivers from the sea early in spring, being most abundant in the Yangtze, which it ascends over 1,000 miles—as far as the rapids allow. On its first appearance it is fat, and less hurtful as food than at a later period. A portion of fat found in the abdomen is so esteemed that it is styled "SI TSZE'S milk," that lady being pre-eminent among all comely women for her beauty. One writer attributes the fatness to willow leaf buds, on which the porpoise feeds; but another combats that idea, inasmuch as the fatness is found to exist before the willow begins to sprout. The former observer, it is

remarked, lived higher up the Yangtze, where the willow buds and porpoise appear synchronously. Another writer says willow buds are hurtful to fish. Porpoise, it is added, are a terror to fish, none daring to attack them; their appearance in large numbers indicates a blow. A centenarian author who wrote at the close of the twelfth century is quoted to show the risk of indulging in porpoise flesh. He begins by a remark of the renowned poet SU T'UNGPO, that the price of porpoise-eating is death, and then narrates how it nearly happened that he failed to see a full century. He was on a visit to a relative, a literary official at Pangyang, who said that his southern region produced nothing more savoury than porpoise, and then he ordered some to be cooked for a repast. As the two were sitting down to partake of it, they had to rise to receive a guest; at that moment a cat pounced upon the dish, upset it, and, with a dog, ate the dainty contents; but very soon it killed them both, thus plucking death from the watering mouths of guest and host. He adds that in Honan the eating-houses prepare mock porpoise dishes, and that in his opinion, the genuine article being fatal, the imitation should suffice to half kill the eaters. Animals seem to be more obnoxious to the poison than man. One authority says that cats and dogs partaking of it invariably die; and fishermen tell me that carrion birds will not eat porpoise entrails, or if they do, they die speedily. The liver, which is regarded as a great delicacy, is often poisonous; the eyes and the blood, and particularly that part which is found near the back, are always poisonous. All cases of fatal poisoning, however, appear to be due to neglect of certain precautions that require to be observed more minutely after the animals have made their visit to the rivers. In the first place the parts indicated require to be well cut away and the flesh thoroughly washed, and, when cooked, to be well boiled; at Ningpo the boiling is kept up for eight hours by careful people. Further to secure safety the Chinese olive or sugar-cane is boiled with the flesh. A man who happens to be taking as medicine a sort of sage will assuredly be killed if he takes porpoise at the same time. The toxic effects vary according to the portion which is taken. The blood and liver are generally poisonous, the fat causes swelling and numbness of the tongue, eating the eyes produces dimness of vision. On the lower Yangtze the fat is prepared for food by mixing it with liquor dregs and for a time burying it. With regard to the whole "river pig" a proverb says, "Eat it if you wish to discard life." Antidotes to porpoise-poisoning are the cosmetic which women use to give red colour to their lips, or the Chinese olive and camphor soaked together in water.

Notwithstanding that magistrates issue proclamations from time to time cautioning people against the use of porpoise flesh, scarcely a spring passes without fatal cases of poisoning from that cause. The *Shênpao* lately reported 11 deaths that occurred at Yangchow from eating portions of that fish.

Poisonous Fish.—The Ningpo gazetteer describes a fish, popularly called "tiger fish," which by its needle-like tail inflicts poisonous wounds on men and kills fish; men thus wounded suffer excruciating and protracted pain, say the people, who also declare that the spinous tail, if driven into a tree, will kill it. Somewhat similar is the "tiger fish," with hedgehog-like spines, which, piercing men, occasion pain; its bite is poisonous, and so is its flesh. On the coast of Chêkiang and Fukien the "swallow-red fish" is found, which resembles the "ox-tailed fish." It darts with extreme velocity, inflicting painful wounds on

mussel divers. Yet worse is the poisonous wound inflicted by a species of ray which has three spines in its tail; the pain is such as to keep the sufferer groaning for successive days and nights.

A sort of sturgeon is found at Soyang which resembles a pig; its colour is yellow. Its stench forbids near approach, and it is very poisonous; notwithstanding, when properly prepared, it is considered fit food for the Emperor, for it constitutes an article of tribute.

A silure, or mud fish, is hurtful, particularly the kind with reddish eyes and no gills. No kind is to be eaten with cow liver, or with wild boar or venison. A small species of shark called "white shark," having a rough skin and hard flesh, is slightly poisonous. Several kinds of eels are represented as hurtful. Some Ningpo people will not eat eels without first testing them. They are placed in a deep water-jar, and if on the approach of a strong light they spring up, they are thrown away as not fit for food. There is a kind of eel that has its head turned upward that is not to be eaten. Eels that have perpendicular caudal fins are to be discarded; also those with white spotted backs, those without gills, the "four-eyed" kind, the kind with black striped bellies, and the kind that weigh 4 or 5 catties. The *Pênts'ao* shows the fallacy of the popular belief that eels spring from dead men's hair, by stating that they have eggs.

The "stone-striped fish" is described as causing vomiting. It resembles the roach, and is a foot long, with tiger-like markings. There are no males among these fish. According to native report, the females copulate with snakes, and have poisonous roes. In the south these fish are hung on trees where wasps' nests are found, by which means birds are attracted that devour the wasps. They swim on the surface of the water, but on the approach of men, dive down.

A curious account is given of a poisonous lacertian. It is amphibious, living in mountain creeks. Its fore-feet are like those of a monkey, its hinder resemble those of a dog; it has a long tail, is 7 or 8 feet long, and has the cry of a child, which is indicated by the mode of writing one of its names. It climbs trees, and in times of drought, fills its mouth with water, and, concealing itself in jungle, covering its body with leaves and grass, expands its jaws; birds, seeing the water therein contained, attempt to slake their thirst in the trap, when they are soon gulped down. The poison that it contains is removed by suspending it from trees, and beating it until it all flows out in the form of a white fluid.

There is a curious tortoise not named in the books, to which Kiangsu people give the names "ash ground tortoise" and "earth duke snake," because of its long tail. It spurts from its mouth a cobweb-like string against a stem of grass, and animals or insects treading on it are bitten, and sure to die from the poison; men also are killed by it. It is supposed to be blind, and for that reason projects its secretion as a feeler. It is found from the fifth to the seventh month. Making every allowance for exaggeration, it would seem to relate to an animal of considerable interest.

Of fishes that are wholesome at ordinary times and hurtful at others, the shad, *shih-yü, i.e.*, periodical fish, is the most remarkable. Its oil is regarded by the Chinese as a remedy in consumption and in cases where cod-liver oil is employed. When the *shih-yü* ascends the Yangtze as far as Szechwan, it becomes poisonous, and is there known as the "pest fish"—a change that is due, doubtless, to exhaustion from its enormous expenditure

of strength in overcoming the torrential rapids that impeded its course. According to the gazetteer of the Kienli district, shad can ascend no higher than "White Snail Rapids," at which place they are largely caught; that is, about 1,100 miles from the sea. When they ascend as high as the Little Orphan, they show signs of change, for according to a popular superstition they receive at that islet an imprint on their heads, which is the seal of the Goddess of Mercy of that place; an inflammation probably occasioned by their encountering the current thus far, and an earnest of the deterioration which awaits them by the time a few reach their limits in Szechwan, where they become "pest fish"—about 1,300 miles from the sea. Carp are sometimes poisonous. There is a kind found in creeks that have poisonous brains, and a species that has two tendons on the back where the blood is black; these carp are not to be eaten. In cooking carp the fumes are to be avoided, or within three days dimness of vision will ensue. They are not eatable when epidemics prevail, when there is looseness of the bowels, or constipation, or when mercury is being taken; nor should they be eaten with dogs' flesh. Perch also are sometimes slightly poisonous, even the famous species found at Sungkiang, having "four gills," are at times unwholesome; when it proves so, the juice of reed-roots is to be given. A fish resembling the silure is slightly noxious. One writer says the same of the excellent barbel, "which are best cooked on plantain leaves."

The chelonia furnish poisonous species, as the three-footed, the red-footed, the single-eyed, the non-retractable head and foot, the sunken-eyed, the abdominal marked 卜, the abdominal marked 王, and the abdominal snake-figured kinds; also a mountain species, called "drought terrapin;" none of these are to be eaten. Edible kinds are not to be eaten with spinach nor hen's eggs, ducks or rabbits; pregnant women partaking of them will bring forth short-necked children; consumptive persons troubled with abdominal swellings should not use them for food. These are not fabulous, but misdescribed animals. The kind which does not retract head and feet is destitute of "petticoat" (that is, the leathery border of the carapace); eating this stops the breath. There is a jingling proverb which says the three and the four toed terrapins may be eaten; while the five-toed, which are transformed snakes, and the six-toed, which are transformed scorpions, are fatal poisons. The three-legged terrapin is found in pools on Chünshan, a hill in Ich'êng, Yangchow (Kiangsu), which a myth represents as a transformation of Yü the Great. It is very cold in its nature, and poisonous; fatal to those who partake of it. A man of T'aitsang ordered his wife to cook a three-legged terrapin, which he ate, and went to bed; soon after he was changed to blood and water, his hair alone remaining. Neighbours, suspecting foul play, informed the magistrate, HWANG TINGSHÊN, who could make nothing of the case, but ordered a prisoner who was condemned to death to eat one of those tripedal chelonians; the consequence was that nothing was left of the miserable culprit but bloody water and hair, whereupon the widow was acquitted. The learned author of the *Materia Medica*, who was less credulous than most men of his day, says, on quoting the above case, that it is not reasonable to suppose that this poison should dissolve a man in that fashion, and cites another authority who says that the animal may be eaten with impunity. He then gives the names of certain maladies for which the three-legged terrapin is prescribed. It does not seem to have occurred to the author in reviewing the above medico-legal case, that the accused widow found in the magistrate no unfriendly judge. Three-legged turtles are found

in the markets at times, the fourth leg having evidently been bitten off in some contest.* Crustaceans are also sometimes poisonous; 15 kinds of crabs are interdicted as food. The antidotes for crab-poisoning are sweet basil or thyme or reed-root juice, the juice of squash or of garlic, etc. If women eat crabs during pregnancy they will suffer from cross-presentations. Crabs are not to be eaten with persimmons. The flesh of the king crab is sometimes poisonous, and is employed as an anthelmintic. Field and ditch prawns are described as poisonous. Many will be glad to hear that there are no admonitions against oyster-eating, although it is known that they and other shell-fish are sometimes poisonous.

Fish-poisoning.

Allied to the subject of poisonous fishes is that of fish-poisoning. At an early stage of their history, anterior perhaps to the legendary period when it is said the Chinese made the discovery of fire, and ere they had acquired the art of fishing, they found dead fish floating on the surface of streams, and in the course of time observed that the fall of certain seeds into the water was followed by the rise of fish, and then commenced the practice, which has continued to the present day, of catching fish by poisoning them. In Western China, says a writer quoted in the *Cyclopædia*, the waters are perfectly clear, and the people do not use nets in fishing, but in the winter season construct rafts, and from these throw on the water a mixture of wheat and the seeds of a species of polygonum pounded together; which, being eaten by the fish, they are killed and rise to the surface, but in a short time they come to life again. This they call "making the fish drunk." In this part of China, seeds of the *Croton tiglium* are employed very extensively for the same purpose. They are powdered and cast into the water, and being, like the polygonum, extremely acrid, speedily kill the fish and crustaceans that partake of them; these seeds render them colourless and flavourless, but not hurtful. Purchasers are never deceived, as their appearance discloses their mode of death; they are bought by the poor because of their cheapness. Similar modes of poisoning fish prevail on portions of the Grand Canal adjacent to the Yangtze, which sometimes call forth magisterial interdicts as damaging to the public health. As foreigners often travel through those parts, they would do well to bear the fact in mind. One of the district magistrates of Soochow lately issued a proclamation forbidding the sale of the "thunder duke creeper," which miscreants employ for catching fish, terrapins, prawns, crabs and the like, killing them, and injuring men. It is during the fourth month that care is most required, the practice being more common at that time.

Meteorological.

I am indebted to Comte d'Arnoux for an abstract of meteorological observations for the half-year.

* While our author holds to the existence of three-legged turtles and terrapins, he gives place to an exposure from another writer of a fraud respecting three-legged toads, a fraud that may be detected by macerating the animal. Belief in the existence of toads with three legs is fostered by legends of one of the genii, who is pictured as bestriding an animal of this description; images of the same are worn also on children's caps as charms.

ABSTRACT of METEOROLOGICAL OBSERVATIONS taken at WÊNCHOW during the Half-year ended 30th September 1883.

DATE.		Barometer.	THERMOMETER. Diurnal Mean Temperature in Shade.	THERMOMETER. Extreme Temperature in Shade.	Humidity, 0–100.	Nebulosity, 0–10.	RAINFALL. No. of Days.	RAINFALL. Total during Month.	REMARKS.
1883.		*Inches.*	° *F.*	° *F.*				*Inches.*	
April.....	Max.....	30.29	67.8	83	95	6.4	16	5.25	Thunderstorms with heavy rain on 14th, 17th and 20th.
	Mean	30.01	64.2	...	80.5				
	Min.....	29.69	60.6	52	50				
	Range ...	0.60	7.2	31	45				
May.....	Max.....	30.14	73.0	82	100	8.7	24	6.84	9th, 7.45 P.M.: squall, N.W.; very heavy rain. 15th, 1.45 P.M.: squall, N.N.W.; heavy rain.
	Mean	29.93	69.8	...	83.8				
	Min.....	29.70	66.6	60	46				
	Range ...	0.44	6.4	22	54				
June	Max.....	30.03	82.7	96	95	6.8	12	5.00	21st, 5.30 A.M.: heavy wind and rain squall from N.W. 25th, 8 P.M.: wind and rain squall from N.W.
	Mean	29.89	78.4	...	78.7				
	Min.....	29.71	74.1	62	46				
	Range ...	0.32	8.6	34	49				
July	Max.....	29.96	89.5	94	95	6.9	12	6.60	3rd, 4th, 5th, 5 P.M.: heavy wind and rain squall, from N.W. on the 3rd, and from W. on the 4th and 5th.
	Mean	29.82	85.4	...	78.9				
	Min.....	29.63	81.4	75	64				
	Range ...	0.33	7.6	19	31				
August ...	Max.....	30.04	87.0	92	96	6.1	15	13.51	5th: typhoon passing to the eastward; *strong wind squalls from* W.N.W. and N.N.W. 6th, 2 A.M.: very heavy rain. 24th: typhoon passing to the eastward; 1 A.M. to 5 A.M., blowing very hard, N.W. and N.N.W.
	Mean	29.79	83.4	...	78				
	Min.....	29.39	79.9	75	58				
	Range ...	0.65	7.1	17	38				
September	Max.....	30.26	83.4	93	100	7	8	2.37	20th: very heavy rain.
	Mean	30.19	79.7	...	77				
	Min.....	29.76	75.9	67	59				
	Range ...	0.50	7.5	26	41				

Dr. W. A. Henderson's Report on the Health of Ningpo for the Half-year ended 30th September 1883.

The hot season of 1883 in Ningpo has been comparatively dry, which, together with a mean maximum temperature of 80°.7 for the four months June, July, August and September, gave rise to an excess of diarrhœa as compared with febrile affections, which latter had preponderated in the three former hot seasons of considerable humidity. The greatest dryness occurred in July, when the wells became exhausted. The poor, unable to purchase water, were compelled to use the stagnant water of the almost dried-up canals and ditches, and of the ponds used for irrigating the fields. Matters were not improved by the typhoon of the 5th August. The river then rising flooded in great part the surrounding country, flowed into the wells and canals, rendering them brackish, and was only unable to reach in elevated positions the irrigating ponds, to which the poor resorted after the rain water in their jars was used up. The Chinese are ignorant of the dangerous character of decomposing animal matter, which must exist in both ponds and canals. The former are close to graves, and in the latter boats containing nightsoil are continually plying, and at the same time the water is used in the preparation of food and tea. Under these circumstances it is not surprising that cholera at length made its appearance in the suburb of Ningpo in which foreigners reside. The first case noted was on the 8th August, and from the 10th to the 13th September in that suburb about 100 persons died. Early in the manifestation of the epidemic directions were issued by the Commissioner of Customs as to what should be done to stem the tide of contagion, and circulars were extensively distributed informing the people of the dangerous character of the choleraic discharges, and indicating the predisposing conditions of the malady. Fortunately, none of the foreigners were attacked, which exemption must be in a measure attributed to their careful mode of life. During that period the foreign population was considerably reduced by the migration in July of almost all the missionary members of the community to the sanitarium of Ta-lan-shan, which is situated on a neighbouring mountain range, at a height of 1,200 feet above the sea level, and about 16 hours' journey from Ningpo. Owing to its exalted elevation the temperature is at least 10 degrees lower than that of Ningpo, and there a delightful vacation may be spent amidst scenery of great grandeur.

As to the malarial fever of Ningpo, it is interesting to note that four of the junior members of the Customs staff who had recently become resident were all attacked by continued malarial fever in which the temperatures ran high.

APPENDIX.

A CONTRIBUTION TO THE HISTORY OF SYPHILIS.

By Dr. B. SCHEUBE of Leipzig.

(VIRCHOW'S *Archiv*, 1883, i, 448.)

THE earliest history of syphilis is veiled in obscurity. It is certain that the disease was not imported from America into Europe, as was formerly believed, but was already present in Europe before its epidemic outbreak at the close of the 15th century, while it is highly probable that it existed there from remote antiquity. Foul disorders of the genital organs, which can be explained only on the supposition of their being syphilitic, are described alike by ancient and by mediæval European and Oriental medical writers. The connexion, however, between the primary affection and the constitutional symptoms quite escaped them, the latter being confounded with diverse other diseases, especially with leprosy. It was only from about the end of the 15th century that the conception of syphilis as a specific disease took root.

All the more consideration is therefore due to a medical work, dating from the beginning of the 9th century, which has hitherto been absolutely unknown in Europe, and to which I am about to invite attention. It saw the light in a country of whose very existence the first rumours only reached Europe nearly half a millennium later, namely, Japan. It bears the title *Dai-do-rui-shiu-ho*, or "Classified Collection of Formulæ used in the period *Dai-do*," and it was drawn up in the year 808.

In yet another respect this book possesses great interest. It is known that the Japanese received from China their medical knowledge as well as their general culture. Up to very recently Japanese physicians derived their science from Chinese works, and indeed this is for the most part the case even at the present day. Medical treatises originating in Japan consist in the main of nothing but extracts from ancient Chinese literature, and re-arrangements of such matter, to which are at most added a few personal remarks by the compiler.

It is altogether otherwise with the work in question. This is of purely native origin. It seems that before Japan entered into close contact with China a tolerably elaborate art of medicine existed there, which, later, was gradually supplanted by the Chinese system. In the period *Dai-do* (806–810) the Emperor HEIZEI TENNO commissioned his two private physicians A-BE MA-NAO and IDZU-MO HIRO-SADA to collect and annotate all that was extant relating to the national art of medicine. Thus it was that the work was composed. It appears to have unfortunately remained unknown, and therefore never to have exerted an influence on Japanese practice, although, considering the time and the race, it bears the stamp of marvellous exactitude, and differs very advantageously from Chinese literary productions, which are often rendered unintelligible by philosophical speculations. It was only at the beginning of this century, in the period *Bunkwa* (1804–1815) that it was for the first time printed, and then from an imperfect manuscript. In 1827 a certain BUDE found a well-preserved manuscript in a temple in the province of Bungo, in the island of Kuishiu, and published it. Since then it has been several times re-issued.

Like the two oldest Japanese works—the *Kojiki* and the *Nihongi*—it is composed in Yamato-Kotoba, the ancient language of Japan, but it is transliterated into Chinese characters. The language having long since fallen into disuse, the work is difficult of comprehension by Japanese of the present day. Many lacunæ in the printed text indicate illegible passages in the manuscript. The book is divided into

100 chapters. The first 13 contain a list of remedies, while in the remaining chapters 122 different diseases or collocations of symptoms are discussed.

Among these syphilis finds its place. The passages relating to it are contained in the 94th and 95th chapters. Of these I subjoin a literal translation, for which I am indebted to my old pupil Mr. KAYAMA of Kioto, who, however, notwithstanding consultation with several learned Japanese, was unable, for the reason given above, to decipher the meaning of many of the names herein applied to diseases.

Chapter 94 runs thus:—

Kata-shiae-kasa, or one-sided inflammatory lesion of the crural region.—In the transverse fold between the root of the thigh and the abdomen, redness and swelling make their appearance, along with severe pain and heat. After some days pus is formed, the swelling bursts, and much matter is discharged.

Mara-kasa-yami, or inflammatory disease of the penis.—At first a painful swelling the size of a millet seed. After some days, formation of ulcer and discharge of pus.

Fuse-kasa (?).—In the skin covering the inflamed part of the penis there is an accumulation of water. This occurs most frequently in summer. The penis is swollen and its tissues much condensed. The swelling extends to the entire organ, so that the orifice of the prepuce becomes invisible. There is a purulent secretion from the skin.

Shiri-mara-kasa, or posterior lesion of the penis.—This proceeds at first as described above (*mara-kasa-yami*). Then ulceration occurs and pain. After a few days the ulceration spreads, and the glans falls off. Thence, the process extending further and further back, the entire penis is lost, and the ulceration passes on to the testicles.

Hashiri-kasa, or chronic lesion.—The poison of the lesion of the penis, or that of the one-sided crural lesion, develops itself, and the chronic lesion is produced. During heat and frost pain is experienced in the bones of the extremities. After some months small ulcers appear on the back and face without pain or itching. A little yellow fluid sometimes exudes from them. Some months later the face rots and stinks, and matter flows from it.

The subject is continued in chapter 95:—

Hone-no-hari-kasa, or lesions consisting in enlargements of bone.—After the healing of the penis lesion the joints of the limbs become painful, so that they cannot be extended and flexed. There is general heat. This is called *hone-no-hari-kasa*. The poison then advances, and various bad symptoms present themselves. The following prescriptions should be employed against them. . . . . The bones are painful. The patient is feverish, the fever lasts all day, and eating is impossible. Constipation is present. The urine is red, and is voided with difficulty.

Nondo-fuki-kasa, or lesion of the throat.—The remaining poison of the penis lesion passes upwards, the membrane of the throat becomes greatly swollen, and the patient suffers pain. Ulceration appears after a few days, much pus is discharged, and a putrid condition gradually ensues, which remains uncured for years.

Ana-kasa, or penetrating lesion, and *hi-kasa* (?).—The remaining poison of the penis lesion proceeds in its upward course and destroys the face or head. Many a decennium passes by without recovery. The still over-abounding poison takes up its abode in the head, and the skin, flesh and bones fall into ruin. Then either the ears are destroyed or ulceration of the nose occurs, and the nose is lost, or blindness comes on, or during years the lower extremities remain swollen and painful, and end by mortifying. The poison destroys the entire body, or the testicles become covered with ulceration, swell and mortify, and many fistulæ are formed. Finally, the entire surface of the body is destroyed.

Mimi-no-hi-kasa, or ear lesion.—The remaining poison advances, and noises in the ears and deafness occur. After some months severe pains are experienced, and there is a foul discharge. Noises in the ears cease, but the patient is deaf.

These are the passages relating to syphilis in the *Dai-do-rui-shiu-ho*. We see bubo, chancre, œdema preputii, phagedænic chancre, exanthemata, bone and joint affections, ulceration of the throat, and severe tertiary symptoms briefly indicated in their order, and finally otorrhœa added, though this, indeed, is here not so thoroughly in its place.

The interdependence of all these affections was known to the authors; they already therefore consider syphilis as a specific disease. It is not possible to say whether they hold that it is contagious, and especially whether they believe it to be communicable by sexual intercourse, for the doctrines of

Chino-Japanese medicine attribute other diseases which are not contagious to the operation of special poisons. I am, unfortunately, not in a position to give any precise information about the treatment of syphilis recommended in the *Dai-do-rui-shiu-ho*, for I could not get the passages relating to it translated. It is for the most part the names of plants which are set forth in the list of therapeutic agents, but what plants are thereby indicated will now probably never be discovered. From Europeans the Japanese seem to have first acquired a knowledge of the mercurial treatment of syphilis.

I may here add the names which are now given to syphilis in Japan. The scientific terms are *bai-doku* (*bai* meaning "fungus" and *doku* "poison") and *so-doku* (*so* meaning "ulcer"). The vulgar names are *kasa* and *hiye*.

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