CHINA.

IMPERIAL MARITIME CUSTOMS.

II.—SPECIAL SERIES: No. 2.

MEDICAL REPORTS,

FOR THE HALF-YEAR ENDED 31ST MARCH 1888.

35th Issue.

PUBLISHED BY ORDER OF

The Inspector General of Customs.

SHANGHAI:

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AND SOLD BY

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National Oceanic and Atmospheric Administration

Environmental Data Rescue Program

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December 20, 2000

INSPECTOR GENERAL'S CIRCULAR No. 19 OF 1870.

INSPECTORATE GENERAL OF CUSTOMS,

PEKING, *31st December 1870.*

SIR,

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

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

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

b.—Diseases prevalent at.....

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

d.—Relation of disease to { 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*, *Ningpo*, *Tientsin*, *Foochow*, *Chefoo*, *Tamsui*, *Hankow*, *Takow*, *Kiukiang*, *Amoy*, *Chinkiang*, *Swatow*, and *Shanghai*, *Canton*.

SHANGHAI, *21st December 1889.*

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 for the half-year ended 31st March 1888, pp. 1–14;
Report on the Health of Chefoo for the year ended 31st December 1887, pp. 15–17;
Report on the Health of Chinkiang, pp. 18–19;
Report on the Health of Kiukiang, pp. 20–26;
Report on the Health of Canton, pp. 27–28; each of these referring to the year ended 31st March 1888.
Clinical Studies of disease as observed in China, pp. 29–39.

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:—

R. A. JAMIESON, M.A., M.D., M.R.C.P. ..... Shanghai.

W. A. HENDERSON, L.R.C.S.Ed., L.R.C.P.Ed. ..... Chefoo.

R. G. WHITE, M.R.C.S., L.S.A. ..... Chinkiang.

G. R. UNDERWGGD, M.B., CH.M. ..... Kiukiang.

J. F. WALES, B.A., M.D., CH.M. ..... Canton.

DR. ALEXANDER JAMIESON'S REPORT ON THE HEALTH OF SHANGHAI

For the Half-year ended 31st March 1888.

ABSTRACT of METEOROLOGICAL OBSERVATIONS taken at the Observatory of the Jesuit Mission at Zikawei, for the Six Months ended 31st March 1888. Latitude, 31° 12′ 30″ N.; Longitude E. of Greenwich, 8h. 5m. 45s. *

DATE.	Barometer at 32° F.	THERMOMETER. Diurnal Mean Temperature in Shade.	THERMOMETER. Extreme Temperature in Shade.	Amount of Vapour in the Air per Cubic Foot.	Humidity, 0–100.	Ozone, 0–21.	Velocity of Wind per Hour.	Mean Direction of Wind.	Total Evaporation during Month.	Total Rainfall during Month.	No. of Days Rain during Month.
1887.	*Inch.*	° *F.*	° *F.*	*Grains.*			*Miles.*		*Inch.*	*Inch.*	
Oct. Max...	30.358	71.2 (12)	82.0 (9)	6.943 (18)	95.0 (31)	14.0	24.5 (2)				
Oct. Mean	30.105	64.9	...	5.045	75.2	10.4	11.78				
Oct. Min....	29.784	53.2 (26)	41.5 (28)	2.601 (26)	60.0 (22)	7.5	0.6 (9)	N. 12°.12 E.	3.647	0.615	3
Oct. Range	0.574	18.0	40.5	...	...	...	...				
Nov. Max...	30.500 (30)	61.2 (10)	72.3 (7)	4.786 (5)	87.0 (9)	14.0	32.2 (29)				
Nov. Mean	30.235	53.8	...	3.262	71.0	9.8	11.05				
Nov. Min....	30.032 (28)	45.1 (30)	32.9 (25)	2.130 (27)	52.0 (24)	5.3	0.4 (12)	N. 5°.13 W.	3.139	0.374	2
Nov. Range	0.468	16.1	39.4	...	...	...	...				
Dec. Max...	30.563 (30)	54.0 (10)	66.2 (10)	3.808 (10)	86.0 (1)	13.7	46.7 (30)				
Dec. Mean	30.287	43.8	...	2.079	63.8	10.5	12.85				
Dec. Min....	29.984 (29)	25.0 (30)	17.8 (30)	0.310 (31)	40.0 (30)	7.5	0.6 (24)	N.47°.53W.	3.879	0.142	5
Dec. Range	0.579	29.0	48.4	...	...	...	...				
1888.											
Jan. Max...	30.546 (25)	54.3 (9)	68.4 (2)	3.197 (17)	99.0 (28)	17.5	31.1 (4)				
Jan. Mean	30.303	40.3	...	2.110	73.6	12.9	14.60				
Jan. Min....	29.876 (16)	29.3 (1)	17.2 (1)	0.617 (1)	43.0 (5)	7.3	0.8 (21)	N. 4°.11 E.	2.820	2.741	10
Jan. Range	0.670	25.0	51.2	...	...	...	...				
Feb. Max...	30.590 (1)	48.6 (28)	63.1 (28)	3.556 (28)	99.0 (13)	16.7	34.7 (25)				
Feb. Mean	30.303	37.8	...	1.877	79.9	13.2	14.40				
Feb. Min....	30.090 (16)	28.2 (8)	20.1 (9)	0.706 (8)	59.0 (8)	8.0	0.0 (4)	N. 5°.13 W.	1.741	3.695	8
Feb. Range	0.500	20.4	43.0	...	...	...	...				
March... Max...	30.480 (6)	60.3 (24)	72.3 (11)	5.181 (24)	99.0 (13)	17.7	35.6 (7)				
March... Mean	30.131	49.6	...	3.456	80.6	13.1	14.72				
March... Min....	29.994 (17)	39.2 (4)	30.0 (5)	1.629 (20)	63.0 (19)	9.7	1.0 (30)	N.47°.53W.	2.535	4.568	12
March... Range	0.486	21.1	42.3	...	...	...	...				

* Position of British Consulate-General, Shanghai:—Latitude, 31° 14′ 41″ N.; longitude, 121° 28′ 55″ E. of Greenwich.

NOTE.—The figures in parentheses indicate the days on which the observations to which they are appended were made; under the headings "Diurnal Mean Temperature in Shade" and "Humidity" they indicate the days on which the *mean readings* were respectively highest and lowest. The monthly barometric means are deduced from four daily observations recorded in the local newspapers. The monthly thermometric means are deduced from the daily maximum and minimum, half the sum of which is taken as the mean for each day. The mean amount of vapour in the air per cubic foot is deduced from the mean humidity and the thermometric mean; the maxima and minima given in the same column must be regarded as very close approximations. The mean humidity is deduced from two daily observations made respectively at 4 A.M. and 4 P.M., the mean of the daily means being taken as the monthly mean. The mean direction of the wind is deduced from two daily observations made at 4 A.M. and 4 P.M. respectively.

For the abstract on the previous page I am indebted to the Rev. Père CHEVALIER, S.J., Director of the Zikawei Observatory.

The winter was dry with occasional falls of snow in January, February and March. At Zikawei the lowest temperature recorded was 17°.2 F., on the night of the 1st January, and the highest 82° F., on the 9th October. In the settlement the lowest temperature was 20° F., on the night of the 30th–31st December, and the highest 87° F., on the 10th October. The mercury first fell to freezing point on the night of the 13th–14th December, sinking next night to 24° F.

As regards temperature the winter was one of fully average severity, as the minima for the months show. The minimum and maximum temperatures respectively for October were 46° on the 27th, and 87° on the 10th; for November, 39° on the 25th, and 77° on the 15th; for December, 20° on the 31st, and 65° on the 7th; for January, 21° on the 1st, and 66° on the 9th; for February, 25° on the 9th, and 59° on the 28th; for March, 33° on the 4th, and 69° on the 23rd. The weather, however, was genial and sunny until the close of the year, and, leaving one snowy day out of account, spring was fully established by the first week in March. After the 24th September the night temperature never touched 70°, which may be taken as the limit outside of which thoroughly refreshing sleep is hardly possible.

If the death rate be accepted as a tolerably accurate gauge of the healthiness of the foreign community, the advent of cool weather will be seen to have caused a very distinct elevation of the level of health. Thus (excluding cholera) the mortality fell from 16 in September to 9 in October. Anticipating here the discussion of the death return, it may be noted as regards climatic disease that the deaths from

Dysentery and diarrhœa, hepatic disease, and enteric and remittent fevers numbered 11 in this half-year as against 22 in the summer half-year, and that in February and March there were no deaths from any disease that can be classed as climatic.

Apart from alcoholism, venereal diseases and one or two abortive or accidental attempts at self-poisoning, which may be held to represent pathological luxuries; neglecting also the affections special to infancy, the diseases chiefly prevalent among foreigners, judging by my own diary, were catarrhal affections of the respiratory and alimentary tracts, conjunctivitis, neuralgia and muscular rheumatism, hepatic congestion mostly of ephemeral character, boils and other skin diseases, enteric and malarial fevers, parotitis, small-pox, scarlet fever and varicella.

Malarial fevers were of frequent occurrence. Thus I find records of 46 cases of intermittent fever treated in private equally divided between the first and second quarters. There were 6 cases of enteric fever, of which two were children of 5 and 8 years respectively, both of fully average severity. It would be interesting to ascertain the ratio of enteric fever to malarial through a series of years, but this I have not done. Scarlet fever made its appearance in December, and 6 cases occurred in my practice in December and January. 1 fatal case, in an infant, was reported in March. Parotitis and varicella were almost epidemic among children; and as an exceptional circumstance I note 3 cases of small-pox, out of which two adults. All 3 cases were of benign character.

Sequelæ of Intermittent Fever.—1. One case of facial paralysis after neglected tertian fever was observed in a previously healthy Chinese 27 years old. There was nothing to suggest intra-cranial lesion either functional or structural except the limitation of the paralysis to the lower part of the right side of the face and a hardly perceptible drooping of the right shoulder. The tongue was projected very slightly towards the right side. There was no muscular atrophy, although the condition had lasted for three

months when advice was sought. The paralysis declared itself one month after the onset of the fever, and immediately on its appearance the precedent symptoms vanished. LANDOUZY (*Des Paralysies dans les maladies aiguës*) does not mention facial paralysis as a sequel of intermittent fever. He cites however several cases of aphasia, and implies that all cases of persistent sequential paralysis depend on "pernicious" attacks. Here, however, the fever, judging by the patient's account, was of the simplest character. It lasted for a month simply because it was inefficiently treated by native practitioners. Arsenic was recommended, but the patient was immediately lost sight of.

2. A case of true "ague-cake" was also observed in a Chinese the subject of profound malarial cachexia. The spleen extended to the antero-posterior mesial plane of the abdomen, and encroached slightly on the hypogastric region. As contrasted with the great frequency of malarial splenic affections in India, this condition is, within my experience, rare among the natives in this part of China, who however suffer severely from all forms of paroxysmal fever.

Beyond the daily routine of scavenging little or nothing in the shape of sanitary work has been done by the Councils during the half-year.

The following Table of Burials in the Foreign Cemetery has been compiled from the municipal registers.

BURIAL RETURN of FOREIGNERS for the Half-year ended 31st March 1888.*

CAUSE OF DEATH.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.	MARCH.	TOTAL.
Small-pox	...	...	1†	1	1‡‖	...	3
Scarlet fever	...	...	...	...	...	1‖	1
Enteric fever	...	1†	1	...	...	...	2
Remittent fever	...	...	...	1‡	...	...	1
Cholera	1 3†	...	...	...	...	...	4
Alcoholism	...	1	...	...	...	...	1
Bright's disease	...	...	1†	1‡	...	1†	3
Pernicious anæmia	...	...	...	...	...	*f* 1‡	1
Dysentery	1 1†	...	...	...	...	...	2
Phthisis	1†	...	...	...	...	1	2
General paralysis	1	2	...	...	...	...	3
Apoplexy	...	...	1‡	...	...	1‡	2
Convulsions	...	...	...	1‖	...	...	1
Cerebral effusion	...	...	...	...	1	...	1
Heart disease	...	1	1	...	...	1	3
Aneurism	...	...	1	1 1‡	...	...	3
Bronchitis	1‖	...	...	...	*f* 1‡	...	2
Pneumonia	...	...	...	*f* 1	...	...	1
Asthma	...	...	...	...	*f* 1‡	...	1
Atelectasis	...	*f* 1‖	...	...	...	*f* 1‖	2
Stomatitis	...	...	*f* 1‡‖	...	...	...	1
Gastro-enteritis	...	...	...	...	...	2‖	2
Diarrhœa	*f* 1	...	...	...	...	...	1
Ulceration of colon	...	...	...	...	...	1†	1
Cirrhosis of liver	1†	1	1 1†	...	...	...	4
Hepatic abscess	...	...	...	1	...	...	1
Cancer of neck	...	...	...	...	...	1	1
„ kidney	...	...	...	...	*f* 1‖	...	1
„ uterus	...	...	...	*f* 1	...	...	1
Contusion of chest	1†	...	...	...	...	...	1
Laceration of brain	...	...	...	...	...	1	1
Drowned	1†	...	...	...	1†	...	2
Suicide	...	...	...	*f* 1	...	...	1
Uncertified	...	...	...	1†	...	...	1
TOTAL	13	7	9	11	6	12	58

* Not including deaths (if any) among the Catholic religious bodies and the Japanese; exclusive also of premature and still births.

† Non-resident. ‡ Asiatic or Eurasian. ‖ Infant. *f* Female.

A glance at the figures opposite the Causes of Death which are printed in italics will give an idea of the gravity of the incidence of climatic disease in the different months.

Proceeding now to analyse this table, we find that of the total of 58 deaths recorded, 5 were due to accident (4) and suicide (1). There remain 53 deaths attributable to disease. There were 10 deaths among children, distributed as follows:—8 of European birth (5 males and 3 females), children of residents; and 2 non-Europeans (1 male and 1 female). The age of the oldest child was 3 years; death was due to scarlet fever. The age of the youngest was 24 hours, atelectasis of the lungs being the cause of death. The foreign adult mortality from disease was therefore 43 (37 males and 6 females), or, excluding 8 adults of Asiatic birth (5 males and 3 females), the European adult mortality was 35 (32 males and 3 females). Of these, 13 (all males) were non-residents. The mortality among resident European adults was therefore 22 (19 males and 3 females).

I.—Causes of Death from Disease among Resident European Adults.

Small-pox	1	General paralysis	3
Enteric fever	1	Cerebral effusion	1
Cholera	1	Cardiac and vascular disease	5
Alcoholism	1	Pneumonia	1 (female).
Dysentery and diarrhœa	2 (1 female).	Hepatic disease	3
Phthisis	1	Cancer	2 (1 female).

19 males and 3 females, against 15 males and 4 females for the last previous corresponding period.

II.—Causes of Death from Disease among the Children of Resident Europeans.

Scarlet fever	1	Atelectasis of lungs	2 (females).
Convulsions	1	Gastro-enteritis	2
Bronchitis	1	Cancer of kidney	1 (female).

5 males and 3 females; the numbers for the winter six months of 1886–87 having been 3 males and 5 females.

III.—Causes of Death from Disease among Non-Resident European Adults.

Small-pox	1	Phthisis	1
Enteric fever	1	Ulceration of colon	1
Cholera	3	Cirrhosis of liver	2
Bright's disease	2	Uncertified	1
Dysentery	1		

13, all males, against 16 males during the corresponding period of 1886–87.

IV.—Causes of Death from Disease among Non-European Adult Foreigners.

Remittent fever	1	Aneurism	1
Bright's disease	1	Bronchitis	1 (female).
Pernicious anæmia	1 (female).	Asthma	1 („).
Apoplexy	2		

5 males and 3 females, against 2 males and 1 female in the last corresponding period.

V.—Causes of Death from Disease among Non-European Foreign Children.

Stomatitis	1 (female).	Small-pox	1

1 male and 1 female, as against 1 male and 1 female during the previous corresponding period.

The fatal case of small-pox in February occurred in an unvaccinated Eurasian child aged 2½ years. The two cases of gastro-enteritis occurred in twins 5 weeks old, who died within a couple of days of one another. The death from laceration of the brain occurred in a boy about 12 years old, who fell over the banisters of a staircase from the second floor of a lofty building, striking a flagged pavement below. A rare instance of malignant disease of the kidney in a female infant aged 17 months is deserving of notice.

The total number of deaths from cholera during the year 1887 was 20, viz., 4 European adult resident males, 1 European adult resident female, 1 European resident child; 11 European non-resident adult males; 2 non-European adult females and 1 non-European child. Deaths from cholera occurred only in August (3), September (13) and October (4). Of 28 admissions to the General Hospital, 18 died, a mortality of 64.3 per cent.

The only important contribution to cholera literature during 1887 was M. VON PETTENKOFER'S *Zum gegenwärtigen Stand der Cholerafrage*, and its value depends on the clearness and fairness wherewith the rival doctrines held regarding the origin and diffusion of the disease are set forth. The origin of cholera out of non-specific conditions affecting the individual and his environment is taught by Dr. JAS. CUNNINGHAM. The specific character of the cholera germ and the spread of the disease by the transmission of that germ from one person to another find their most powerful advocate in Dr. ROBERT KOCH. The potentially specific character of the germ in relation to special local conditions mainly telluric, in the absence of which the germ is inoperative, is the eclectic doctrine of which VON PETTENKOFER himself is the acknowledged representative.

VON PETTENKOFER admits that KOCH'S comma bacillus may be the germ, though, after a review of the competing claims of many other micro-organisms whose virtues (or vices) as cholera producers and propagators have been extolled by various investigators whose names they bear, he keeps his final judgment in suspense, preferring still to denote the unknown quantity by the symbol *x*.* He temporarily closes the discussion with the words :—

Let all this be as it may, it is at least evident that bacteriologists must still labour and search for many a long day before they come to a common understanding.†

But whatever may be the germ its identification is of no practical value when once cholera has started in a given place. Even the isolation of patients must necessarily be inoperative in the presence of an infinitesimal organism which can make its way through invisible chinks. The only unquestionable safety lies in flight, which must be to some locality known by experience to be unfavourable to cholera propagation. To take ship and be off to sea is for example an excellent security. As regards danger to the place selected, VON PETTENKOFER admits that a few sporadic cases may arise, but he insists that an epidemic is impossible. All obvious personal precautions such as bathing, complete change of attire, etc., must of course be taken by the fugitives with a view to diminishing the chance of producing even these sporadic attacks. The author cites a multitude of striking examples in support of his teaching. Practically it amounts to this, that as we are powerless against the dissemination of the germ, all our efforts should be directed towards making the soil upon which it is to fall unpropitious to it. So far as we know, every condition that tends to lower the vital resistance of individuals or groups of individuals is favourable to the multiplication and dissemination of the hypothetical germ; and therefore prophylaxis sums itself up in personal and public sanitation.

* *See* Customs *Medical Reports*, XXV, 33.

† Dem sei nun, wie ihm wolle, jedenfalls sieht man, dass die Bacteriologen noch lange zu arbeiten und zu forschen haben, bis sie einig werden. S. 571.

Unfortunately for the hopes of those who once anticipated that the introduction of antiseptic substances into the alimentary canal or blood might prove noxious to the bacilli of cholera, it has been established by SCHULZ* that weak solutions of arsenious, chromic, formic or salicylic acids, corrosive sublimate, iodine or bromine increase the activity of yeast cells. This is of course no absolute reason why the same substances or some of them, sufficiently attenuated to ensure their harmlessness to the human organism, should not prove destructive to other vegetable cells, but it proves how unreliable purely theoretical inferences are when vital phenomena are in question.† It is certain that an antiseptic substance, no matter how powerful, taken at random, has as many chances of failing as of succeeding when opposed to a parasite the peculiarities of which are unknown. Thus the anthrax bacillus is far more sensitive to the action of corrosive sublimate than is its probable homogen the bacillus subtilis, or common hay bacillus, which resists that action very successfully. Nor can the results of experiment on the lower animals be considered in any way reliable as premisses upon which to found deductions applicable to the human species, when we find that the reactions respectively of two rodents so closely allied as the rabbit and the guinea-pig to the same infective micro-organism differ widely one from the other. For instance, inoculation with the pyocyanic bacillus, which produces general infection with a rapidly fatal result in the rabbit, produces a sluggish local lesion in the guinea-pig without, except in the rarest cases, any general infection.

At all events, the germ or germs of cholera cannot possess the least importance from the point of view of the treatment of individual cases until their natural history, including all their susceptibilities to change of locality and to alterations, real or presumed, in the tissues which shelter them and the vital fluids which bathe them, as well as all their transformations, is completely worked out, or a lucky chance reveals some means whereby without injury to the human organism the intestine can be made an unsuitable nidus for them. And it is further evident that even this knowledge would be of no avail unless it could be applied before the secretion of the non-particulate poison which, absorbed into the blood, alters its character and, probably by some action on the vaso-motor system, constringes the pulmonary arterial radicles and empties the arterial side of the greater circulation. How soon after the germs reach the intestine this poison is secreted, how soon absorption begins, are alike unknown; but it is at least certain that the secretion commences before the presence of the germs could be recognised. What the poison itself is, it is equally impossible to say. Its action resembles that of muscarin, and, on the theory that something identical with this alkaloid or closely resembling it was the toxic element, I have treated four cases of cholera with atropin, without however the slightest good effect. That the micro-organisms, quoad foreign intruders, are not the cause of the symptoms and fatal course of the disease is certainly true. They are never found in the circulating blood. Everything indicates that they are merely instrumental, that in common with other pathogenic organisms they possess the power of dissociating living or dead albumen, forming soluble organic toxic products; and there is good reason to believe that at a certain stage of their development the poison they produce proves fatal to themselves.

* PFLÜGER'S *Archiv*, xlii.

† *See* Customs *Medical Reports*, xxvii, 36, for a brief description of ROLLIN'S investigations in this direction.

Bacteriology therefore does not promise to contribute much, if anything, to the treatment of cholera, though it will in all probability be fruitful in suggesting general measures of prophylaxis. The curious instance of the micro-organism of symptomatic anthrax which rabbits resist unless the perfectly innocuous micrococcus prodigiosus is inoculated at the same time, when it kills with certainty, is exactly parallel to that of the ingestion of the separately harmless amygdalin and emulsin, which administered simultaneously to an animal kill it by the formation of hydrocyanic acid. On the other hand, HUEPPE finds that inoculation with the inert "earth bacillus" renders mice refractory to infection with anthrax. In the vast majority of cases it is not to the biology of pathogenic germs but to the chemistry of the substances which they produce that we must look for some possible light on treatment.

The Chinese have many specifics for cholera, all equally inert. Patients brought moribund into hospital frequently show that a little of everything has been tried on them—scraping of the skin of the neck, moxa to the chest and limbs, acupuncture here and there. The native internal treatment is unintentionally evacuant, as it consists for the most part, in Shanghai at least, in the administration of warm bulky infusions and decoctions of nauseous herbs. These are rejected as soon as swallowed. All native statements about disease are perfectly unreliable, but there cannot be any doubt that the local mortality from cholera every year is extremely heavy. A year or two ago all the dead-walls in the settlement and suburbs were covered during summer and autumn with posters recommending a nostrum in terms somewhat more modest than those usually employed in such cases. Subjoined is a translation of this advertisement, for which I am indebted to Mr. H. A. GILES:—

This elixir is specially adapted for severe choleraic attacks, restoring the patient to life when at the very last extremity. Each bottle contains two doses, which should be poured out into a spoon, mixed with a pinch of sugar, placed upon the tongue and swallowed with the aid of some warm water.

1. The "midnight-noon" cholera is the worst, *i.e.*, the cholera which begins at midnight and ends in death at noon, or *vice versâ*. It is sometimes unaccompanied by the usual symptoms of vomiting and purging. But whenever there is a feeling of great oppression at the pit of the stomach, accompanied by gasping for breath, a very low pulse, sunken eyes and sweating, quickly administer a double dose of the medicine and apply hot things to the four extremities. If taken in time the patient may be saved. A delay of four hours would make recovery very difficult.

2. Vomiting and purging, coldness and numbness, cramps and drawing up the feet may all be cured by one dose as above.

3. The severest bowel pains may also be cured by one dose.

4. Where there has been a succession of watery stools, 10 to 20 in number, one dose will stop the purging. In dysentery this medicine should not be given.

5. If, in cases of vomiting and purging, the medicine is brought up, the contents of a bottle should be divided into three or four doses and gradually administered. Thus, the result will be successful.

6. Given to a patient who has recently got a chill, the result is most beneficial, as has often been proved; but if there has been an alternation of hot and cold fits for three days past, although the symptoms may seem to be choleraic, this medicine must not be given.

7. Half doses may be given with advantage to children with quick convulsions (?), but in cases of slow convulsions (?) it should not be given.

Care must be taken not to confound cases of heat apoplexy, arising from exposure to the sun over heavy work, or in travellers, with cholera. This medicine would in such cases cause instant death. These cases do not occur in the autumn; but in all cases great caution is necessary.

[The above can be supplied at the rate of 40 bottles for $1.]

There are one or two noteworthy points in this paper, especially the recognition of the two forms of cholera—that which kills by almost immediate collapse without any natural effort towards the evacuation of the materies morbi, and that which declares itself more noisily by urgent purging and vomiting. The so-called "choleraic diarrhœa" or "cholerine" of cholera seasons, which is really cholera without collapse, is likewise indicated, as also is the choleriform invasion of "pernicious" intermittent fever. And finally, allusion is made to the possibility of confounding certain forms of heat apoplexy with cholera, which argues a far acuter observation of the resemblances and differences of disease than we should expect from Chinese practitioners.

The drug thus recommended to the public is the essential oil of peppermint.

During the Paris epidemic of typhoid fever in 1882 it was established by Professor BROUARDEL as the result of a careful statistical inquiry that the prevalence of the disease in a given district was directly proportional to the density and uncleanliness of the population.* This question of overcrowding, with its necessary correlatives of filth and disease, is every year assuming more importance in Shanghai, though no public notice whatsoever is taken of it. A considerable amount of money is constantly being wasted on disinfectants by the Municipal Councils, upon whom it has not yet dawned that watering the streets with an attenuated solution of carbolic acid, pouring the same substance into the drains, and rendering the neighbourhood of latrines more intolerable than it naturally is by flushing them with malodorous chemicals, are all merely laborious and extravagant devices for procuring the appearance of doing something. It cannot be too distinctly affirmed and understood that cleanliness, and cleanliness only, is convertible with disinfection, and that where dense overcrowding exists special means should be adopted to ensure cleanliness. The main streets of the settlements are with some exceptions kept reasonably clean, but the condition of the side streets and alleys is deplorable. In my Report for the summer half-year of 1882,† and again at the ratepayers' meeting held on the 13th February 1885,‡ special attention was drawn to the dangers arising from the uncontrolled invasion of the settlements by hordes of people of incredibly filthy habits. The description which I gave three years ago of the detestable condition of the settlements provoked, as the official report of the meeting shows, a considerable amount of somewhat misplaced hilarity. In fact, the matter is altogether lacking in humorous elements, and urgent as it was then it is still more urgent now. It is not because the question is neglected by the Councils and laughed at by the ratepayers, nor because there has as yet been no devastating epidemic referrible to the horribly insanitary condition of the less obvious parts of the settlements, that we shall not sooner or later with certainty discover that we are developing in our midst all the conditions essential to epidemics or favourable to them. Nobody can deny the difficulty, perhaps even the impossibility, of limiting overcrowding, or the

* Académie de Médecine: séance du 14 novembre 1882.

† Customs *Medical Reports*, xxiv, 42.

‡ *Debates, Proceedings and Votes*, page 28.

difficulty of securing the cleanliness of back streets and native dwellings. But this latter is not impossible. For three years the Sanitary Board in Hongkong has insisted on the thorough cleansing of native tenements at certain periods, and the Colonial Surgeon reports a contemporaneous decrease of more than 100 per cent. in the death rate from diseases reasonably attributed to an insanitary environment. What has been attained in Hongkong is certainly not unattainable in Shanghai. But should any attempt be ever seriously made to do here what has been successfully accomplished in Hongkong, the difficulty will arise out of competing interests, out of lack of capacity to realise a danger which is not visibly menacing, and out of the lack of a government not too ideally democratic to be strong.

In 1885 a Special Committee of the Board of Supervisors of San Francisco was appointed to inquire into the condition of the Chinese quarter of that city and draw up a report for submission to the General Board. The following extracts from that report will serve to illustrate and emphasize the remarks made in the preceding paragraph:—

Your Committee were impressed with the fact that the general aspect of the streets and habitations was filthy in the extreme, and so long as they remained in that condition so long would they stand as a constant menace, as a slumbering pest, likely at any time to generate and spread disease. . . . . Your Committee are still of the opinion that it constitutes a continued source of danger of this character, and probably always will so long as it is inhabited by people of the Mongolian race. They are glad to be able to say that the presence and operation of the surveyors have had a most salutary effect in inducing a general cleaning-up where filth was the rule before. . . . . Something has been gained in the demonstration of the fact that by constant watching and close supervision the residents of Chinatown can be made to adopt somewhat better habits and become a lesser source of danger to the public health.*

The population to be dealt with was estimated as numbering at least 30,360.

Your Committee have found, both from their own individual observations and from the reports of their surveyors, that it is almost the universal custom among the Chinese to herd together as compactly as possible, both as regards living and sleeping rooms and sleeping accommodation. It is almost an invariable rule that every bunk in Chinatown is occupied by two persons. Not only is this true, but in very many instances these bunks are again occupied by relays in the day-time, so that there is no hour, night or day, when there are not thousands of Chinamen sleeping, under the effects of opium or otherwise, in the bunks which we have found there.†

Through inquiries which I have had made by a reliable Chinese teacher I have evidence that, mutatis mutandis, this description applies to hundreds of common lodging-houses in various parts of these settlements.

With commendable impartiality the Special Committee record a fact which manipulated by ignorant persons might weaken much of the effect of their report:—

In a sanitary point of view Chinatown presents a singular anomaly. With the habits, manners, customs and whole economy of life violating every accepted rule of hygiene; with open cesspools, exhalations from water-closets, sinks, urinals and sewers tainting the atmosphere with noxious vapours and stifling odours; with people herded and packed in damp cellars, ... it is not to be denied that, as a whole, the general health of this locality compares more than favourably with other sections of the city which are surrounded by far more favourable conditions.‡

* *Report of the Special Committee*, page 4. † *Report*, page 6. ‡ *Report*, page 17.

This conclusion must be deduced from the death rate. But the well-recognised impossibility of obtaining reliable statistics from Chinese makes it probable that the paradox is fully to be explained by designed falsification of returns. In any case the Committee are not blinded to the fact that this real or supposed immunity from fatal disease must be merely temporary, and whether temporary or not does not diminish the danger arising from the prevalence of grossly insanitary conditions in the midst of a European community. The report then carries its readers into Chinatown and unfolds its horrors by a long series of particular instances. Horrors that, like the second gulf of the eighth circle of DANTE'S Inferno,

> Held sharp combat with the sight and smell;*

dens like the place revealed by the archangel to Adam,

> Sad, noisome, dark;
> A lazar-house it seemed; wherein were laid
> Numbers of all diseas'd; all maladies
> Of ghastly spasm, or racking torture, qualms
> Of heart-sick agony, all feverous kinds,
> Convulsions, epilepsies, fierce catarrhs,
> Intestine stone, and ulcer, colick pangs,
> Demoniac phrensy, moping melancholy
> And moon-struck madness, pining atrophy,
> . . . . .
> Dropsies and asthmas, and joint-racking rheums.
> . . . . .
> And over them triumphant Death his dart
> Shook, but delay'd to strike.†

The Medical Director of the United States Navy when counselling means whereby to combat the existing condition of affairs makes the following sensible and practical remarks:—

> Where there are fresh air and dryness and cleanliness there can be no cholera; and where there are not it will come in spite of proclamations and perfunctory quarantines. Fumigations and disinfections which mask putrescence and substitute medicinal smells for sickening stenches are as ridiculous as the noise of gongs and tom-toms and exploding fire-crackers and gingals, by which the Chinaman hopes to frighten the devils who desolate his home and country, and worse than useless from the false sense of security which they give.‡

Public sanitation in Shanghai can never become effectual until it becomes popular, and never popular until it is reduced to its simplest and most intelligible terms. The lavish use of water for flushing and of lime for washing is all that is necessary, and it cannot be pretended that this reduction of sanitary requirements to lime and water does not realise all that can be desired in the way of simplicity. If the Councils would devote the money now annually wasted on chemical disinfectants to increasing their expenditure on water, so that not only the main and side streets, but every alley, courtyard and private yard in the Chinese quarters should be

* Che con gli occhi e col naso facea zuffa. *Inferno*, canto xviii.
† *Paradise Lost*, xi, 478–492.
‡ *Report*, page 18.

plentifully flushed out at stated intervals;* and if further they made the lime-washing of every Chinese tenement compulsory at certain periods, very much of the existing danger from overcrowding would disappear. If it be objected that the Councils have not the necessary power to do this and are not likely to obtain it, the same end could easily be secured by owners of native house-property if they combined to make the letting of their houses contingent on submission to such periodical cleansing. Whether these owners can be educated up to the point at which the needfulness of some comprehensive system of sanitation becomes evident is another question. In other words, the doubtful part of the business is whether a simple and effectual plan of sanitation can be made popular by its intelligibility.

It is worth considering by the public whether it is creditable that among an intelligent and cultivated community whose government is largely based on the voluntary principle there should be none or next to none of those sanitary measures adopted which experience in European and American cities has proved to be so needful that they are made compulsory by law. In New York, for example, the foundation for practical work is obtained by the enactment that everything which the Board of Health declares to be a nuisance is thereby constituted a nuisance in the eyes of the law. The general staff of the health bureau is divided into seven departments, of which one is charged with the abatement of non-structural and casual nuisances such as filthy tenements, filthy yards, stables or areas, dangerous or filthy vacant lots, choked street or yard gullies, etc.; a second has power compulsorily to remove to hospital all cases of small-pox and typhus occurring within the city, while another takes cognizance of the plumbing, drainage and ventilation of all new buildings. These are the only sections of the municipal sanitary work accomplished there which are of obvious applicability here, and they suffice to show the direction in which we ought to move if our lack of public sanitary legislation is not to remain a scandal. The difficulty lies in the competition of private interests, and in the carelessness about measures which it is too much trouble to understand and without which matters have hitherto gone tolerably well. But the relation of foreigners to Shanghai is no longer the fugitive one which existed a quarter of a century ago. The development of family life makes the postponement of intelligent sanitation less excusable than it has been in past years.

The question of quarantine, or rather of inspection, of vessels arriving in Shanghai from places infected with certain specified diseases has on several occasions been discussed in these Reports.† The existing "Sanitary Regulations for the Port of Shanghai" were reprinted in the 7th volume.‡ These, however, were in practice found defective, and the following draft Regulations were submitted in 1884 to the Inspector General of Customs, the Taot'ai and Commissioner of Customs in Shanghai and the local foreign Consular body. By all these officials they were approved; but they failed to receive the sanction of the foreign Ministers at Peking, the

* In the 4th century B.C. the system of profuse flushing of streets was in operation in the city of Jerusalem (TIMOCRATAS), and the ruins of Pompeii attest that the same simple and effectual device was adopted there 2,000 years ago.

† Especially Customs *Medical Reports*, vii, 38, and xxvi, 15. ‡ Page 38.

opposition to them originating with Sir HARRY PARKES, as he himself informed me, on the ground that their application might lead to delay in steamer work. The rapid steam communication in these days between distant parts of the world is extremely favourable to the introduction of exotic diseases. A curious instance illustrating this was observed a few years ago in Paris. The living larva of a South American insect was found in a tumour removed from the skin of a woman who had recently arrived from Brazil.* No doubt the micro-organisms of disease are even more capable of resisting such changes of environment as befel this larva without injuring its vitality. Hence the elaboration of Article II in the subjoined draft.

DRAFT SANITARY REGULATIONS FOR THE PORT OF SHANGHAI.

PREAMBLE.—1. The "Sanitary Regulations for the Port of Shanghai" (July 1874) are hereby cancelled.

2. Throughout the following Regulations the word "vessel" shall be held to mean merchant vessel of foreign build, or lorcha, with the boat, boats, sampan, or sampans belonging to the same; the term "disinfection" shall be held to include the destruction of infected articles which may be incapable of disinfection or not worth disinfecting; the term "master" shall be held to mean the officer or person for the time being in command or charge of a vessel; and the term "Medical Inspector" shall be held to include any legally qualified medical practitioner deputed in case of need by the Medical Inspector and approved by the Commissioner of Customs.

I.—1. When disease of an infectious character is known to prevail at any place it shall rest with the Superintendent of Customs and Board of Treaty Consuls to declare such place infected. The Superintendent will inform the Commissioner of Customs when this declaration is made, and the Commissioner will give public notice thereof and will provide for the detention and medical inspection of vessels arriving at Shanghai from that place.

2. The Commissioner of Customs will as soon as practicable notify the Commissioner [or other local authority in the case of foreign ports] at the port declared infected that vessels from that port are subject to detention on arrival at an imaginary line drawn N.N.W. across the river from the mouth of the Yang-ching Creek.

II.—1. Every vessel bound to Shanghai (i) direct from a place declared infected, or (ii) arriving at Woosung within 10 days of having left such place (whether she shall have called at an intermediate port or not), or (iii) within 10 days of having been in communication with a vessel on board of which there may have been at the time of communication a case of any of the under-mentioned diseases or the body of any person dead of any of those diseases, or which has left an infected port within 10 days of the date of such communication; or having on board (iv) a case of cholera, small-pox, typhus fever, plague or yellow fever, or (v) a case that may reasonably be suspected to be one or other of these diseases, or (vi) the dead body of a person who has been so affected or might reasonably be suspected of having been so affected; or (vii) on board of which a case of any of the above-mentioned diseases may have been observed at any stage of the disease within 10 days of reaching Woosung—shall, on passing the Woosung Spit Buoy and while coming up the river, fly a yellow flag at the fore.

2. The masters of all such vessels shall afford every possible facility to the Boarding Officer at Woosung, whose duty it will be to communicate with them and to give a copy of these Regulations to each master.

* *Semaine Médicale*, 1883, page 127.

III.—The Commissioner of Customs will from time to time, by despatch, appoint a Customs Medical Officer to carry out the inspection of such vessels and to discharge such other duties as may arise out of the application of these Regulations. The officer so appointed shall for the time being be the "Medical Inspector." Public notice will be given of his appointment.

IV.—On reaching the imaginary line described in Article I, paragraph 2, of these Regulations, such vessels shall anchor and await the visit of the Medical Inspector.

V.—On being informed that a vessel is coming up with the yellow flag at the fore, the Harbour Master or his deputy will send written notice to the Medical Inspector, who shall visit the vessel without delay.

VI.—The River Police will meanwhile prevent all communication between the vessel and the shore, pending the Medical Inspector's instructions.

VII.—1. The master of such vessel shall on the Medical Inspector's demand muster the officers, crew and passengers, produce his roll and passenger lists, give every facility for the examination of the vessel, and afford all required information within his knowledge regarding the previous and actual sanitary condition of the vessel, crew and passengers.

2. If there has been no infectious disease on board during the voyage or within 10 days of having reached Woosung, the vessel may be admitted immediately to *libre pratique*. If in the judgment of the Medical Inspector there be no reason for detention, a written statement to that effect will be given to the master, with or without permission to haul down the yellow flag at once.

3. Masters of those steamers to which permanent berths have been assigned may proceed to their berths immediately on receiving the Medical Inspector's permission to haul down the yellow flag. The Medical Inspector will report his action in such case to the Harbour Master.

4. If in the Medical Inspector's opinion it be necessary to detain the vessel below the anchorage for purposes of disinfection $\frac{\text{or}}{\text{and}}$ removal of infected person or persons $\frac{\text{or}}{\text{and}}$ of a dead body or bodies, he will give directions to that effect to the master and will order the measures necessary to be taken. This detention will be reported to the Harbour Master, by whom the Consul concerned will be informed if detention for a longer period than 12 hours be deemed necessary.

5. If circumstances should be such as in the Medical Inspector's judgment to render it necessary, the vessel may by him be directed to proceed outside the Red Buoy at Woosung while such measures as may seem advisable for the removal of infected persons $\frac{\text{or}}{\text{and}}$ dead bodies and for the disinfection of the vessel and cargo are carried out. The Medical Inspector shall in this case at once notify the Commissioner of Customs and Harbour Master, by either of whom the Consul concerned will be informed of the circumstances.

6. When it is found necessary to detain a vessel or to cause her to return to the Red Buoy as above provided, all persons who are free from the diseases enumerated in Article II, paragraph 1, of these Regulations, or from reasonable suspicion of such diseases, shall, on giving their names and destinations, be permitted to land immediately, under conditions as to their baggage which will be determined by the Medical Inspector.

7. In any case the term of detention may be extended or lessened at the discretion of the Medical Inspector in concert with the Consul concerned. Suitable arrangements will when necessary be made for provisioning, according to the circumstances of each case.

VIII.—Nothing may be landed and no person may be allowed to leave the vessel or to go on board without the sanction of the Medical Inspector, which in case of detention must first be notified to the Harbour Master.

IX.—No vessel detained for disinfection will be reported to the Customs as an arrival by the Consul concerned until the Consul shall have been informed by the Harbour Master that the Medical Inspector's directions as to disinfection have been properly carried out.

X.—In accordance with Local Rule 17 of the Pilotage Regulations, Pilots shall not, until authorised to do so by the Harbour Master, quit any vessel under their charge to which any of the clauses in Article II, paragraph 1, of these Regulations are applicable. If tug-boats are required they must "tow ahead" all such vessels.

XI.—1. Should a case of any of the diseases mentioned in Article II, paragraph 1, of these Regulations, or a case of dysentery or typhoid fever, occur on board a vessel in harbour, the patient must be landed under the direction of the Medical Inspector or of some legally qualified medical practitioner. During the stay of such patient on board the vessel, and after his departure, care must be taken that no discharges from his stomach or bowels, and no washings from his body, clothes, bed, bed furniture, etc., are thrown into the river without previous disinfection; nor may anything which it may be considered necessary to destroy be cast overboard.

2. Should disease of a virulent character break out on board any vessel in harbour, or any infectious disease become so prevalent on board as in the Medical Inspector's opinion to render it necessary to remove such vessel to a point outside the harbour limits for purposes of disinfection, the Harbour Master, moved thereto by the Medical Inspector, may order such vessel to remove to the place indicated and to remain there until such processes of disinfection are carried out as may satisfy the Medical Inspector, who will thereupon report to the Harbour Master that the vessel is no longer a source of danger.

3. The Harbour Master will immediately inform the Consul concerned when it is necessary thus to remove a vessel temporarily from the anchorage.

4. During the interval necessary for the process of disinfection, communication between the vessel and the shore will be prevented by the River Police, unless conducted under such conditions as are sanctioned by the Medical Inspector.

XII.—It is assumed that the Commanding Officers and Surgeons of men-of-war visiting Shanghai will, either themselves or in concert with the Medical Inspector, take such precautions in case of need as will carry out the spirit of these Regulations.

XIII.—Any person who commits a breach of these Regulations will be dealt with by the authority to whose jurisdiction he is amenable.

XIV.—When disease shall have ceased to prevail at a place declared infected under Article I, paragraph 1, of these Regulations, the Superintendent of Customs, when moved thereto by the Board of Treaty Consuls, will inform the Commissioner that detention of vessels from that place is no longer necessary. The Commissioner will thereupon give public notice that vessels from that place are not subject to detention, unless they should fall under any of the clauses iii to vii inclusive of Article II, paragraph 1, of these Regulations. The Commissioner of Customs [or other local authority in the case of foreign ports] at the place previously declared infected will be at once notified of this for the information of masters of vessels leaving that place for Shanghai.

DR. W. A. HENDERSON'S REPORT ON THE HEALTH OF CHEFOO

For the Year ended 31st December 1887.

THE year 1887 was remarkable chiefly on account of the flood, preceded by an exceptionally severe rainfall in May and June—32 inches of rain falling in one month—and followed by a very dry autumn, during which the country suffered as much perhaps from the want of rain as it had previously done from its extra abundance.

The health of the foreign residents was satisfactory as far as climate was concerned, but the improvements (?) in the drainage system were noticeable in their anything but improving the health of those exposed to their influence. The drains have become a yearly increasing nuisance, and the foul smells given out from them have at last stimulated land-renters to take the matter into consideration.

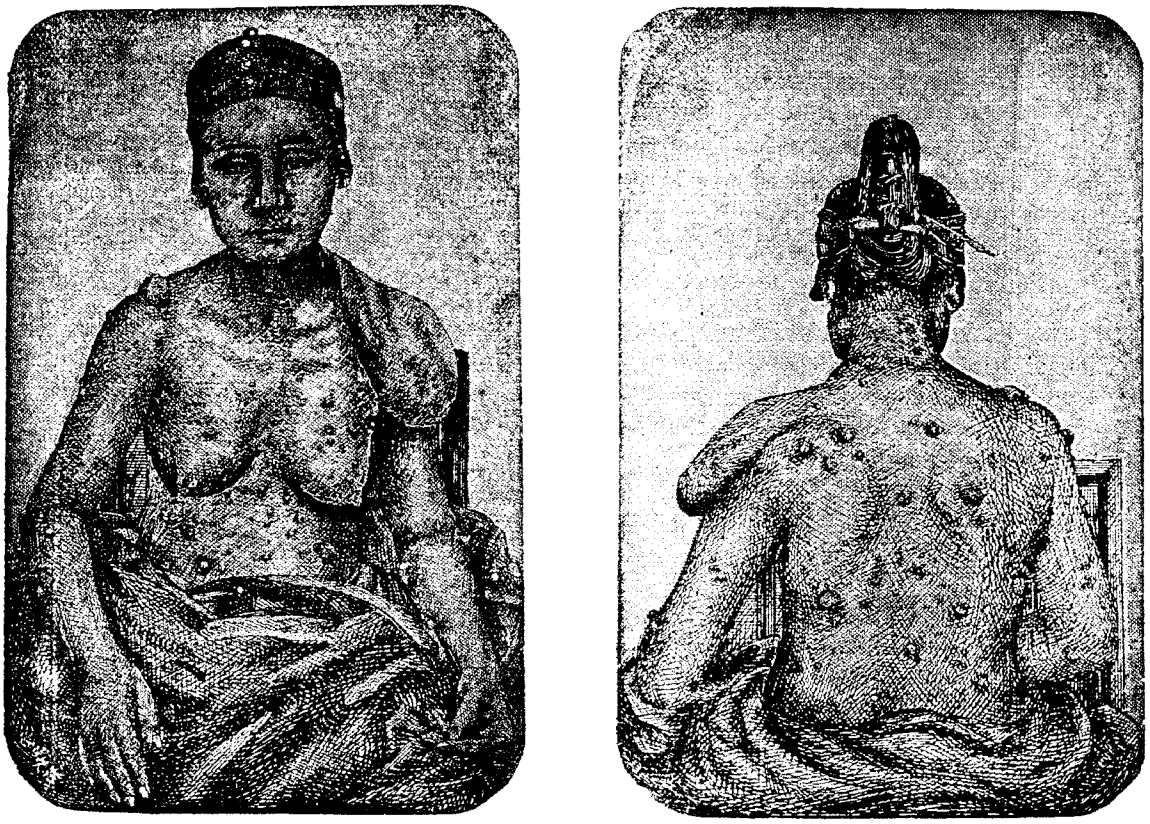
Apart from the inconvenience of having nothing but water as a means of communication, the influence of the flood was not markedly prejudicial to health. At about the end of the period it became evident that steps would need to be taken if the flood were to continue, to prevent mischief. The water was more or less stagnant, and it was difficult to prevent Chinese from throwing all kinds of house refuse into it; and therefore things became noticeably unpleasant. After the flood subsided there were numerous cases of fever and diarrhœa, but not more than we usually see during the month of September. A case of diphtheria occurred in one family, but did not spread. It was the first appearance of the disease in this port, to my knowledge, and it occurred under circumstances specially favourable for its growth. I am therefore able to give a most satisfactory account of the health of the foreign residents for the period under consideration.

The new system of taking observations at the Custom House is a most complete one; four are taken daily—at 3 A.M. and 9 A.M., at 3 P.M. and 9 P.M. The barometer with attached thermometer, and the wet and dry bulb thermometer; the solar and ground radiations are also noted; the rainfall, direction and force of the wind, and notes of the state of the weather. During January snow fell lightly on several days; deep snow on the 22nd and 23rd. February was marked by dense fogs in early mornings, lasting from about 5.30 A.M. to 8.30 A.M.; light fall of snow took place on 8th February. April was remarkably fine. Heavy rain fell in May and June—one night, 7 inches fell. July 14th was the date of flood, and after that date until end of December—in fact, well on into 1888—we had no rain; the days marked as those on which rain fell had to be so marked to make the observation accurate, but the light sprinkle that took the place of a rain-shower ought not to be dignified with the name of rain.

Quite recently the question of the contagiousness of leprosy has been the subject of renewed interest, and it is therefore the duty of all having opportunities of studying the subject to record their experience.

In this part of China leprosy is very common, especially those forms of it evidenced clinically by affections of the nervous system. There are also a fair proportion of the tubercular and ulcerating varieties.

As far as my experience of leprosy in China goes, I have failed to obtain any positive evidence of its contagiousness or to throw any light on the great problem of its propagation. Although it is very prevalent, and I see cases of it every day, I have never yet been able to trace the source in any case to the fountain-head. A common answer of a patient is that none of his family have or ever have had a like disease; often they do not know of another case in their village, etc. There are of course special difficulties in obtaining information from the class frequenting our waiting rooms. I have been forced to come to the conclusion that I cannot depend on any statement made to me by my ordinary hospital patient, and believe only what I can verify for myself by an examination. The experience of leper hospitals in civilised countries will be of most value in deciding on this difficult point. Certainly, if it be contagious it is but in slight degree, and in a special way, and requires specially favourable circumstances to even allow of its being so.



MOLLUSCUM FIBROSUM.

The following notes of this case are worth recording. Ko, aged 28. First saw appearance of tumours at the age of 12 years. When 7 years old she constantly suffered from great pain in lower part

of belly. This condition continued until the age of 12, the pain appearing to cease when the tumours appeared. Since that date she has continued in perfect health, with the exception of indigestion and the anxiety about her condition. The tumours began as simple marks on the skin like a reddish coppery stain; no itching or pain. Their growth was slow, and she only suffers from the discomfort of the uneven surface when washing herself.

Family history.—Grandmother, aged 80, alive, well and strong; no tumours. Mother had the same tumours as patient, only to a slighter extent; cannot say when they began, but a witness states that immediately after death taking place all the tumours disappeared. Age of mother at death, 28. Patient is the only living child—one died at 6 months, one at 9 months; causes unknown. Father alive and in perfect health, aged 56; no tumours. Husband alive; no tumours. Patient's family consists of two girls and one boy. A girl, aged 10, has now got a few tumours on body; the boy, brought for my examination, has three or four on thigh, and one or two of the initial reddish coppery stains—age $3\frac{1}{2}$, and a particularly fine, fat, healthy-looking child.

All the tumours on body have the same characters. They appear to be composed of a loose fold of skin with a knotty hard core not filling one-tenth of the cavity and firmly attached to the deep fascia. In some this core is almost absent. The external appearances are *nil*, simply a circumscribed pouch of normal skin. The large tumour on shoulder feels like the emptied sac of a cystic tumour. That on the right shoulder has the external characteristics of a lipoma.

Removal of one for examination refused.

DR. R. G. WHITE'S REPORT ON THE HEALTH OF CHINKIANG

For the Year ended 31st March 1888.

THE health of the community was considerably affected by the long hot summer weather. The following table, supplied to me through the kindness of the Harbour Master, Mr. POYNTER, will indicate how protracted the heat was:—

METEOROLOGICAL TABLE, April 1887 to March 1888.

MONTH.	BAROMETER.		THERMOMETER.				RAINFALL.	
	Max.	Min.	Max.	Min.	Average Highest.	Average Lowest.	Quantity.	No. of Days.
1887.	*Inches.*	*Inches.*	°	°	°	°	*Inches.*	
April	30.60	29.55	87	40	70	56	2.08	4
May	30.10	29.72	85	52	68	60	5.60	10
June	29.90	29.50	88	64	75	67	3.96	10
July	29.90	29.55	98	66	93	70	3.42	5
August	29.80	29.53	98	74	89	78	2.53	4
September	30.32	29.70	89	58	75	69	2.38	7
October	30.57	29.85	82	47	74	54	1.05	2
November	30.71	30.20	71	43	58	48	0.26	2
December	30.88	30.10	68	23	50	45	0.16	1
1888.								
January	30.85	29.93	67	23	48	35	2.53	8
February*	30.84	30.17	56	24	45	36	1.61	1
March	30.77	29.91	76	34	61	48	3.68	9

* Three days snow.

The chief complaints were diarrhœa, fever (intermittent) and gastric complaints. These last were very troublesome and severe at their onset. In one case the vomiting and prostration were so severe that I had to resort to the hypodermic injection of morphia; this acted like a charm. Towards the end of the hot season there was a case of cholera amongst foreigners:—

The patient, a robust healthy man, eventually recovered rapidly. Cramps in almost all the muscles were most distressing, and for some days the muscles were painful. The treatment consisted of hypodermics of morphia, spirits of camphor with tincture of opium internally, and a liberal supply of beef tea and brandy given repeatedly in small doses. A native policeman had a sharp attack also. He recovered well. The treatment was the same as above.

There were many cases of cholera amongst the natives, and the mortality was considerable. There were many sudden deaths during the hot weather; so far as I could learn they were all old persons or persons well up in years. The cause of death was most probably apoplexy, to which there already existed a tendency, and the heat accelerated the disease. In one case I attended this was undoubtedly the cause of death. One case of typhoid fever occurred amongst foreign residents.

The symptoms were not well marked, if I except the typical spots. There was at the end troublesome lung complication; but eventually a good recovery was made, the patient having youth and strength on his side.

A severe case of burn occurred on a house-boat some 40 miles from Chinkiang. The weather was bad and the water in the canal low. The unfortunate lady who was burned had in the end to come overland—a distance of 20 miles—in a native chair, through rain and wind. The case did very well, and much is due to the lady's courage and endurance in securing a good recovery.

Several cases of urticaria of a very distressing nature came before me—one, a foreigner, had a miserable existence for four or five days.

There were three births during the year amongst the foreign community and no deaths.

I was summoned to a native lady who had been in labour some 20 hours. The numerous nurses in attendance were at a loss to account for the delay in delivery. After some delay I was allowed to make an examination. The presentation was natural, the parts much tumefied, the pains feeble, the bladder full and evidently the cause of obstruction to a great extent. The patient's pulse was fair, her voice strong, although she complained of great distress and pain. I promised speedy delivery; but the lady's mother would not allow a "foreign devil" to further meddle with her daughter, so in disgust I left the house. About two hours after I was sent for, and a promise given that I was to have absolute control over the case. On my return I found there had been a profuse discharge of some fluid. I passed a catheter. The bladder was empty, having ruptured. The pains were feeble, and the lady was getting so also. I gave ergot, had chloroform administered and delivered with forceps. The child was still-born. The patient recovered well, but with a fistula.

Another case was reported to me further illustrating the sufferings endured by Chinese women, and the many lives lost through ignorance and superstition. A midwife removed the trunk and extremities of a fœtus (so it was reported to me), leaving the head in the passage. The woman survived two or three months. She had a profuse and foul discharge and grew weaker every day until she perished. She wished to have me sent for, but her friends would not agree to it.

A case of hydrophobia occurred in July.

No. 3 Municipal Policeman was one morning (14th June 1888), at 6 o'clock, engaged in sweeping on the Bund (he was stripped to his waist), when a dog jumped on him and bit him. At 10.30 A.M. he was brought to me. He was a strong muscular man, 29 years of age. He had a very superficial scratch, not 3 inches long, to the right of the right nipple, which might have been made by a dog's teeth; he had two smaller scratches, not skin deep, probably made by the dog's claws. It was so long after the scratch was

DR. G. R. UNDERWOOD'S REPORT ON THE HEALTH OF KIUKIANG

For the Year ended 31st March 1888.

IN this port the past year has been the healthiest of the last seven, notwithstanding the floods and the high range of temperature during the summer months.

I am indebted to Mr. Harbour Master GÜNTHER for the following abstract of meteorological observations:—

MONTH.	THERMOMETER.				RAINFALL.	
	Maximum.		Minimum.			
	Highest.	Lowest.	Highest.	Lowest.	Days.	Inches.
1887.	°	°	°	°		
April	88.5	52.5	66	39	10	3.04
May	89.0	61.0	70	55	17	10.60
June	95.0	75.0	79	66	22	16.44
July	101.5	73.0	85	68	7	2.81
August	100.0	80.0	85	76	7	1.37
September	97.5	73.0	79	65	6	0.48
October	90.0	60.0	70	51	4	0.93
November	77.0	55.0	57	40	5	0.58
December	74.0	41.0	45	21	3	0.38
1888.						
January	69.0	32.0	45	20	10	3.08
February	58.0	32.0	43	18	8	1.76
March	80.0	46.5	59	35	14	5.64

Number of days on which rain fell during the year, 113 = 47.11 inches; snow fell 20.70 inches, on 13 days; and hail, 1 day = 0.23 inch.

Usually when the river begins to fall, the heat being still great, there have been a good many cases of intermittent fever and intestinal troubles. In the past autumn these affections were less frequently met with. Even the stagnant pond behind the concession which annually gives strong grounds for being credited with the propagation of the malarial contagium—though its condition, as judged by its offensive smell, was not better than in former seasons when every house near would have its case of ague more or less severe—had no appreciable

influence on the general health. A considerable number of those living in its neighbourhood in previous years had already spent some time in climates unhealthy as regards periodic diseases, and required little exposure to light up the old mischief. Their successors have been more fortunate, and being therefore more able to withstand the onset of these maladies have suffered less. The very gradual fall of the river too, permitting the thorough drying of the surface of the ground to the water's edge, had certainly much to do with the general well-being.

Most foreign residents here understand so well the necessity of being careful to avoid exposure to the sun in summer that that is seldom a cause of illness. The following cases show that caution is certainly desirable:—

At 5 o'clock on a bright morning in July, A. B., 26 (who had been suffering from malarial fever for several weeks), with two children, left one of the bungalows on the hills 8 miles off to come down to the concession. The journey ordinarily takes about three hours; but from some cause or other the party did not arrive in the street before half-past 9. For half the way the patient was in an open chair, and, having parted with her hat to protect better one of the children, she was entirely without covering to the head except such as was afforded by an umbrella. Soon after getting in, intense headache with vomiting and rapid action of the heart began, and the temperature rose to 104°. There was intercurrent delirium, which, however, was of little significance, the patient being weak from the continuance of the fever and her nervous system for the time particularly susceptible. The continued pouring of iced water on the head relieved the headache, and a calomel purge remedied the constipated condition which is so often present in these cases. Bromide of potassium subdued the restlessness and inability to sleep which followed, and the temperature gradually fell. After a week the patient was able to be moved home, and with no permanent bad result from her imprudence.

In summer weather, C. D., 25, left Kiukiang in a small native boat for a city 100 miles down river on open-air mission work. One day, when on the return journey and 18 miles from home, he was preaching in the lane of a Chinese town; on either side of him was a whitewashed wall, and he was exposed to the full blaze of the afternoon July sun. He felt faint and sick after a short time of it, and had to go back to his boat. Fever came on, with headache, and he got little rest during the night; but felt better when he arrived at home next morning. He then went out, with the result that the fever came back, and, to add to his troubles, a bruise on the shin received while bathing developed into a sub-periosteal abscess. The propriety of further exposure he had ample time to consider in the six weeks which passed before he was fit for work again.

The following notes of a case which came under my care in the end of July last present some points of interest:—

E. F., 21, female, unmarried; complained of headache confined to the back of the head and increased by study; inability to sleep well at night; poor appetite, and pain and fulness in the pit of the stomach after eating; and loss of strength. Patient stated that in April last, while travelling in a steamer on the coast, she fell, the back of her head striking the deck, and remained unconscious for some little time afterwards. She had to be carried ashore on arrival in port, and some weeks elapsed before she was fit to be removed to the interior. Headache and inability to sleep were then the chief symptoms, and the physician who saw her advised rest, counter-irritation to the nape of the neck and iodide of potassium internally. The patient was a little over the middle height, strongly built and of fair muscularity. Her face was full, with some colour, and did not convey the impression of continued suffering. The upper eyelids were not particularly prominent or drooping. The circulatory, respiratory, urinary and reproductive

systems were healthy. With regard to the nervous system there was neither paralysis nor paresis of any part of the body. Sensation over the trunk and limbs was unaltered, and deep pressure applied to the spines of the vertebræ, from the nape to the sacrum, gave a negative result as far as the production of pain was concerned. The application of a hot-water sponge over the same surface also gave negative evidence. Control over the limbs was perfect. There was absence of the ankle clonus, the knee jerk was natural in both limbs and the abdominal reflexes were normal. The headache was said to be dull and heavy, almost constantly present, not confined to either side of the occipital region, and became worse after study or reading. It, when present, was not so severe as to hinder the patient from enjoying singing by herself or joining in with others in the exercise. Rest in the recumbent posture soothed it little, nor did pressure on the occiput increase it. General intelligence and memory were unimpaired. The patient's thoughts were much occupied with her condition, though she did not seem to be despondent about herself. The nerves of special sense were normal. The tongue was a little flabby and coated. The appetite was poor and the quantity of food taken not enough. Fulness and pain in the epigastrium were complained of after eating; but moderate pressure over that area did not increase the discomfort. Vomiting was not at all a frequent symptom. The bowels had a tendency to constipation. The opinion formed about the case was (1) that there was no evidence pointing decidedly to lesion of the brain or cord; (2) that while it was probable that there had been as the result of the accident a certain amount of local inflammation of the membranes with deposit, and to this might be attributed the headache which from the time of the fall had never been long away, yet it was certain that the effects of the concussion on a highly nervous temperament at a time when the increasing heat retards convalescence must be credited with many of the symptoms. How much was due to the injury and how much to hysteria I could not determine. The patient was ordered to rest as much as possible without being compelled to remain in the recumbent posture all the time. A strong iodine liniment was to be applied to the nape of the neck as often as it could be borne, with a view to relieving the headache, and iodide of potassium in 5-grain doses three times a day with the same intent. Bromide of potassium was given at bedtime to produce sleep, and the diet was to be of an easily-assimilated character. This treatment was continued for five weeks, and the patient had less headache and slept better. The dyspeptic symptoms had, however, increased; the appetite also was not improving; and it was judged best to substitute bismuth and alkalies, to be followed as soon as the state of the stomach permitted by a tonic of quinine and strychnia. The patient had for some considerable time been getting round-shouldered, and the only explanation of this I could find was weakness of the muscles of the back. She left the district in the end of September, better on the whole, though still not satisfactory. Within a fortnight of her departure the surgeon who was consulted in the case ordered absolute rest on a mattress on the floor and the wearing of a plaster of Paris jacket. I am informed that at the end of December, with a certain general improvement, there was almost complete anæsthesia of the left half of the body, and thus the share of hysteria in the symptoms was made out.

Pulmonary Abscess.—Towards the end of December I was called to see a patient who complained of pain in the lower part of the right side of the chest behind, of cough with blood in the spit the day before, and that the breath had a fetid odour. The history given was that in July last, just eight weeks after confinement, the patient had had sharp pain in the place of which she now complained, with troublesome cough and high fever. This lasted for eight days, when after a paroxysm of coughing there was a discharge of purulent matter. Improvement began from that time, and the patient had been in her usual health and free from cough for over two months before the present attack. The patient was 28, of middle height and build and somewhat anæmic, and had a pulse of 90, and temperature of 100°.5. There was cough accompanied by pain in the right side, and a small quantity of sticky muco-purulent expectoration, which had no smell. Percussion over the right base posteriorly gave comparative dulness to the level of the angle of the scapula. The breathing was tubular, with a little crepitation over the affected area, and at

one point pleuritic friction was present. Poultices were applied to relieve the pain, the bowels were cleared and a mixture given to increase the action of the skin. There was little change from day to day, except that the cough was said to be less and that the sputum became more distinctly purulent, though little increased in quantity. On the ninth day from the time the patient had been first examined she felt much worse, the temperature rose to 104°.5, the pulse was 115, and the respirations 30. After a severe fit of coughing the expectoration became at once very copious, and from its acridity and hot taste the patient declared that the old abscess had opened up. With the coughing there was blood which amounted to about 4 ounces in the 24 hours; it was from some ruptured vessel, and not mixed with the sputum. With this high fever the area of dulness had extended upwards slightly. At times in the midst of a fit of coughing, or after it, a foul odour would fill the room. After the 1st day there were only traces of blood, and the fever began to diminish on the 5th, so that by the 10th day the temperature had fallen to 101°. The expectoration continued profuse—over 10 ounces in 24 hours,—frothy and muco-purulent, and with at times a foul smell. Under the microscope the débris of lung tissue could be found readily. The odour of the breath was most disagreeable. Every paroxysm of coughing was not accompanied by this fœtor, but only when the plugged bronchus leading to the cavity of the abscess had got so clear as to permit of the escape of gas. The irritability of the stomach during the continuance of the high fever and for some days after was most troublesome, and was made worse by full doses of quinine given to lower the temperature. Percussion over the base of the lung after the escape of much spit produced the cracked-pot sound. The patient took with good result 8 ounces daily of a dry natural port when the appetite was almost absent. At the end of the third week the temperature was steady at 99° to 100°, the pulse 85 to 90, and the respirations 22 to 25; the appetite had quite returned, and though the expectoration was still abundant the fœtor was less than before. A second acute attack, preceded by a slight rise of temperature and increased discomfort in the affected side, came on 37 days after the first, and again there was blood in the sputum. The fever, which had not risen so high, went down quickly, and as convalescence progressed the temperature fell to 98°.6, at which point it remained several weeks. Night sweating was not a feature in the case, and with the administration of atropine it, when present, readily disappeared. During the acute attacks pain was complained of, and was often relieved by poultices or a hot-water bottle. The air in the room was kept moist night and day by the use of a bronchitis kettle. The lung did not improve in the same degree with the general condition, and with each attack there was additional tissue involved. During the first interval, and more especially in this, retention of the contents of the abscess cavity was followed immediately by a rise of temperature and feeling of discomfort on the part of the patient. Relief followed free expectoration. A third attack followed the second at an interval of five weeks, and was not so severe. Convalescence was less satisfactory than before, and the patient gained ground very slowly. Every few days there have been slight feverish attacks, the appetite has been less uniformly good, and now and then there have been paroxysms of coughing with blood in the spit. Dulness is now to be found on percussion as high as the sixth rib in the right interscapular space and in the right nipple line to the level of the fifth rib. Moist sounds are always to be heard over the affected part of the lung. The lining of the abscess cavity is, to judge from the fœtor, in much the same condition as before. Along with good nourishment the patient has found port to be most beneficial. Bismuth has repeatedly been of use in allaying irritability of the stomach. Turpentine in full doses has not had any appreciable good effect on the odour from the lung, and the inhalation of air impregnated with creasote, etc., could not be tolerated.

Two foreign patients died during the year. The one was a child of 18 months, who had always been very delicate. She had for three days been fretful and had slight fever, which was believed to be due to teething. On the fourth day she seemed better, took more food, and all irritability of the stomach had ceased. Up to midnight, when her father and mother went to bed, she was bright and lively; when they awoke in the morning she was dead. There were signs that there had been a fit of convulsions. A second child of 6 weeks died of acute bronchitis.

There were four male and two female children born during the year.

6,000 natives came to the dispensary during the year, and of these 520 remained as in-patients. As usual, malarial, eye and skin diseases were the most numerous. Much of the eye practice is very disappointing, it being impossible, from the extent and duration of the mischief, to do more than relieve a very little in many cases. 16 patients with dog or other bites were treated. As a rule the bite of a dog heals up quickly in a healthy subject, but in the case of beggars, usually so anæmic and half-starved and so frequently bitten, the results are often very different; sloughing is apt to follow, with the loss of much tissue.

A deaf and dumb boy of 12 is now in hospital who was bitten by a native dog in the calf. When brought to the hospital, 14 days after the injury, the skin, subcutaneous tissue and fascia had disappeared from the body of the gastrocnemius and upper part of the tendo Achillis, and numbers of maggots were burrowing under the edges. He was in poor condition at the time he was bitten, and now, five weeks after the accident, while his appetite is good and the wound is drawing in, he is in such a hydræmic state that recovery is very doubtful.

A child of 9 months was brought here in June in whom the scrotum, testes, and penis, except a short stump, had been gnawed off by a native puppy. The mother, who was deaf and dumb, had gone out of doors for a little, leaving the child in a cradle, and only noticed from blood about the dog's jaws that something was wrong. Little blood had apparently been lost, and the patient being in good health the raw surface healed rapidly. Beyond daily dressing nothing required to be done.

In February a youth of 19 was bitten by a dog in the street, the scrotal covering being entirely reflected from the left testis, which fortunately was uninjured. A few horsehair stitches were put in, and the wound healed kindly.

Rabid dogs in the street are now and then heard of, and patients come said to have been bitten by them, but no case of rabies in man has been met with. Three Chinese are under observation now who believe themselves to have been bitten by mad dogs; they were certainly bitten, and came to have their wounds attended to when the poison had more than time to be completely absorbed.

A man, aged 28, was brought in from the country in the early summer with his right foot and leg much swollen. The whole of the skin and subcutaneous cellular tissue of the dorsum of the foot and to 3 inches above the ankle on the anterior surface of the leg had sloughed away, leaving the tendons exposed. The other leg was œdematous and the face puffy and anæmic. The patient was a woodcutter, and one day, three weeks before his coming in, when at work, a snake bit him on the dorsum of the foot. Intense inflammation was set up and the parts became gangrenous. In spite of treatment he became gradually worse and died two months after the bite.

In July a youth of 20, who was collecting reptilia for an English naturalist then exploring this district, was bitten on the distal phalanx of the right forefinger by a viper 15 inches long which he had just captured. When seen three days afterwards the phalanx was gangrenous, and was lost. He did not suffer in general health.

No immediately fatal case of snake-bite in this neighbourhood has come under observation. That such do occur is very probable, seeing that besides several of the smaller poisonous snakes, a variety of cobra—found elsewhere also in China—has been killed in the Lü hills, a few miles off. Another snake, a crotalus—new to the British Museum authorities last year,—

is found in Chitsao district in numbers. Dr. GÜNTHER believes it, from the development of its poison glands, to be a most dangerous reptile. The spirit in which a specimen of this snake is preserved is considered to be a valuable medicine, and is freely purchased from hawkers who go about selling it. The ordinary price for a live crotalus is $3.

The following history is interesting from the view of Chinese legal procedure in cases of insanity which it gives:—

TUI I-FAN, 28, a native of Shantung, was employed as colporteur by a missionary who came to live here in autumn last and brought him with him from Chinkiang, his former residence. Mr. TUI was a man of quiet habits, but was believed by one or two who had opportunities for observing him closely to be "queer in his head" at times. At the end of the year some irregularities were found in his accounts and he was dismissed. A day or two after his services were dispensed with he besought another missionary living in the same compound with his former employer to admit his boy into the mission school, saying that as he had now nothing to do he meant, as soon as his little boy was provided for, to kill his wife, who was utterly bad, and then jump into a well in the compound and drown himself. His remark was regarded as a stupid joke, and the notion that he was insane was not entertained. In the afternoon of the third day following this conversation a disturbance was heard at the gate, and the wife, who lived in a cottage almost directly opposite, rushed into the compound bleeding profusely from two cuts on her head and followed by her husband armed with a chopper. Some of the servants went to the help of the woman, and the husband, ceasing to follow her, went up to the missionary, who was out of doors at the time, and said, "I've killed my wife and am now going to jump into your well." He thereupon started at a run for the well, the missionary at his best speed hurrying after. Fortunately, a few days before, a wall 3 feet high had been built round, narrowing the mouth of the well, and to get in he required to draw up his long coat, thus losing time. Just as he was disappearing his queue was seized and held on to, and in a short time he was hauled out. The woman was taken to the hospital to have her wounds attended to. One cut reached from the right side of the forehead backwards along the parietal ridge about 6 inches. Happily it slanted outwards, reflecting the scalp downwards, and not injuring the pericranium or bones. The other was on the left side and smaller, a piece of scalp 2 inches in diameter being all but detached. A good deal of blood was lost, and to add to the trouble she expected her confinement in a fortnight. Stitches were put in, and the process of healing was quick. After being got out of the well the husband was tied to a tree close by; but as he threatened to jump in again as soon as let loose he was taken to the magistrate. This gentleman was much aggrieved that the domestic difficulty should have been interfered with by foreigners and that he should be dragged into it. He was most unwilling to take charge of the man, till told that if the woman were murdered he would be held responsible. All this while the man behaved rationally, and said that his wife was bad and that he was entitled to do with her as he chose. He convinced both magistrate and attendants that he was quite sane, and though he was put in prison as a precautionary measure, they believed it to be unnecessary. Their views were somewhat modified when he made an attempt to murder one of the yamên runners the same evening, and fetters were put on him. The gaol-keeper was quite tired of him within a week, and tried to get the wife to leave the hospital and go back home to take care of her husband, whom they wished to let go. As soon as she could she left the hospital, and had a place, food, and attendance provided for her by the former employer of her husband till her child should be born. Her husband had his meals also provided by the same gentleman. (A Chinese employer would have been compelled to meet these expenses.) In discussing what was to be done with the family, the magistrate said that they must be sent to the place they came from—namely, Shantung,—if possible, or failing that, then Chinkiang. Being asked what steps would be taken to prevent the man from killing his wife, he replied emphatically, "None; it would be the easiest solution of the difficulty, as in all probability the woman's clan would take care that the man should lose his head." The notion that

it was for him to protect the wife, or to do anything further than get rid of the case by sending the family out of his district, was quite new to him, and one of which he apparently little approved. In due course the woman had a child, the husband remaining in prison meantime. On the fourth day after, I was asked to see her, as she was complaining of not feeling well. There was nothing wrong with her; but the woman who attended to her wants would not give her any food, and the child was dead. The woman, being remonstrated with, said that every woman was expected in this district to get up and prepare her own food on the fourth day, and she wanted besides to get the Shantung woman out of the house at once. The child had been quite well, and was believed by the people of the house to have been made away with by its own mother; hence their anxiety to get rid of her, in case of trouble with the officials. There was no inquiry into the matter, and in a few days the woman was well again. Husband, wife and child were put on a steamer going down river, and nothing has been heard of them since. The poor wife, who had a good reputation amongst the neighbours, was always ready to take her husband's part, and affirmed that had he not been crazy he would not have acted as he had done.

DR. J. F. WALES'S REPORT ON THE HEALTH OF CANTON

For the Year ended 31st March 1888.

DURING the above-mentioned period there has been a greater amount of sickness among foreigners living here than I remember to have occurred in any year of my past residence in this port.

Mr. Harbour Master MAY has prepared the appended abstract from the meteorological tables for last year.

ABSTRACT of CANTON CUSTOMS METEOROLOGICAL TABLES, April 1887 to March 1888.

MONTH.	WINDS.							WEATHER.			BAROMETER.				THERMOMETER.			
											DAY.		NIGHT.		DAY.		NIGHT.	
	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.	No. of Days Fog.	No. of Days Rain.	Rainfall in Inches.	Highest Reading and Average Highest.	Lowest Reading and Average Lowest.	Highest Reading and Average Highest	Lowest Reading and Average Lowest.	Highest Reading and Average Highest	Lowest Reading and Average Lowest.	Highest Reading and Average Highest	Lowest Reading and Average Lowest.
1887.							*miles*				*Inches.*	*Inches.*	*Inches.*	*Inches.*	°	°	°	°
April	7	18	...	...	5	...	6.7	...	8	3.7	30.26 30.02	29.75 29.95	30.20 29.90	29.78 29.92	85 78	58 72	81 72	58 69
May	2	22	3	...	4	...	6.8	...	12	9.4	30.02 29.93	29.74 29.87	29.95 29.90	29.76 29.89	90 86	72 79	84 79	70 76
June	...	24	2	...	4	...	7.6	...	9	3.5	29.95 29.85	29.68 29.79	29.92 29.81	29.68 29.79	94 88	81 85	86 83	75 80
July	...	26	1	1	3	...	7.2	...	12	7.47	29.94 29.77	29.52 29.69	29.95 29.76	29.55 29.75	93 87	79 82	91 84	78 81
August	1	12	5	...	13	...	7.0	...	9	7.75	29.97 29.88	29.70 29.83	29.97 29.87	29.71 29.83	93 87	72 81	92 84	75 80
September	1	15	...	5	9	...	8.2	...	13	13.25	30.03 29.87	29.47 29.81	30.01 29.87	29.17 29.80	94 89	80 84	91 84	76 81
October	19	1	...	...	11	...	5.8	...	3	2.25	30.22 30.08	28.83 29.99	30.15 30.05	29.83 30.01	88 83	68 76	86 78	65 73
November	21	...	...	...	9	...	6.0	...	2	0.4	30.29 30.18	29.99 30.09	30.20 30.13	30.00 30.09	85 77	63 69	75 71	58 65
December	30	...	...	1	...	...	6.0	...	1	0.12	30.40 30.21	30.00 30.12	30.35 30.17	30.05 30.13	79 70	50 61	73 64	48 58
1888.																		
January	20	4	...	...	7	2	5.4	8	2	0.85	30.35 30.18	29.95 30.11	30.31 30.15	29.98 30.12	77 67	45 59	70 62	45 59
February	12	...	2	...	15	1	6.1	9	8	2.95	30.40 30.13	29.92 30.06	30.35 30.12	29.93 30.08	74 57	44 52	71 54	42 51
March	9	5	...	...	17	1	5.6	3	15	14.75	30.28 30.06	29.87 29.98	30.20 30.03	29.92 29.99	81 69	54 65	74 67	52 64

REMARKS.—1887: During April the highest reading of the barometer was 30.26 inches, on the 3rd; and the lowest 29.75 inches, on the 18th. The highest temperature was 85°, on the 29th; and th lowest 58°, on the 23rd and 24th. Rain fell on 8 days, measuring

3.7 inches. S.E. winds prevailed, and the strongest was recorded on the 3rd, averaging 15 miles an hour during 24 hours.—During May the highest reading of the barometer was 30.02 inches, on the 1st; and the lowest 29.74 inches, on the 28th. The highest temperature was 90°, on the 18th and 28th; and the lowest 70°, on the 1st. Rain fell on 12 days, measuring 9.4 inches. S.E. winds prevailed, and the strongest was recorded on the 25th, averaging 11.5 miles an hour during 24 hours.—During June the highest reading of the barometer was 29.95 inches, on the 2nd and 3rd; and the lowest 29.68 inches, on the 14th, 16th and 17th. The highest temperature was 94°, on the 19th; and the lowest 75°, on the 2nd and 3rd. Rain fell on 9 days, measuring 3.5 inches. S.E. winds prevailed, and the strongest was recorded on the 9th, averaging 11.1 miles an hour during 24 hours.—During July the highest reading of the barometer was 29.94 inches, on the 3rd; and the lowest 29.52 inches, on the 20th. The highest temperature was 93°, on the 14th and 28th; and the lowest 79°, on the 25th. Rain fell on 12 days, measuring 7.47 inches. S.E. winds prevailed, and the strongest was recorded on the 20th, averaging 16.8 miles an hour during 24 hours.—During August the highest reading of the barometer was 29.97 inches, on the 30th and 31st; and the lowest 29.70 inches, on the 3rd. The highest temperature was 93°, on the 1st and 13th; and the lowest 72°, on the 16th. Rain fell on 9 days, measuring 7.75 inches. S.E. winds prevailed, and the strongest was recorded on the 15th, averaging 17.5 miles an hour during 24 hours.—During September the highest reading of the barometer was 30.03 inches, on the 23rd and 28th; and the lowest 29.17 inches, on the 12th. The highest temperature was 94°, on the 10th; and the lowest 76°, on the 15th. Rain fell on 13 days, measuring 13.25 inches. S.E. winds prevailed, and the strongest was recorded on the 17th, averaging 19.6 miles an hour during 24 hours.—During October the highest reading of the barometer was 30.22 inches, on the 26th; and the lowest 29.83 inches, on the 5th. The highest temperature was 88°, on the 4th; and the lowest 65°, on the 31st. Rain fell on 3 days, measuring 2.25 inches. N.E. winds prevailed, and the strongest was recorded on the 1st, averaging 12.4 miles an hour during 24 hours.—During November the highest reading of the barometer was 30.29 inches, on the 21st and 26th; and the lowest 29.99 inches, on the 9th. The highest reading of the thermometer was 85°, on the 9th; and the lowest 58°, on the 30th. Rain fell on 2 days, measuring 0.4 inch. N.E. winds prevailed, and the strongest was recorded on the 10th, averaging 12.2 miles an hour during 24 hours.—During December the highest reading of the barometer was 30.40 inches, on the 31st; and the lowest 30 inches, on the 29th. The highest temperature was 79°, on the 13th; and the lowest 48°, on the 31st. Rain fell on 1 day, measuring 0.12 inch. N.E. winds prevailed, and the strongest was recorded on the 30th, averaging 15 miles an hour during 24 hours.—1888: During January the highest reading of the barometer was 30.35 inches, on the 1st and 2nd; and the lowest 29.95 inches, on the 16th. The highest temperature was 77°, on the 19th; and the lowest 45°, on the 31st. Rain fell on 2 days, measuring 0.85 inch. N.E. winds prevailed, and the strongest was recorded on the 19th, averaging 12.4 miles an hour during 24 hours. A light fall of snow was recorded on the evening of the 31st.—During February the highest reading of the barometer was 30.40 inches, on the 3rd; and the lowest 29.92 inches, on the 12th. The highest temperature was 74°, on the 29th; and the lowest 42°, on the 3rd. Rain fell on 8 days, measuring 2.95 inches. N.E. winds prevailed, and the strongest was recorded on the 2nd and 17th, averaging 11.2 miles an hour during 24 hours.—During March the highest reading of the barometer was 30.28 inches, on the 6th; and the lowest 29.87 inches, on the 26th. The highest temperature was 81°, on the 14th; and the lowest 52°, on the 5th. Rain fell on 15 days, measuring 14.75 inches. N.E. winds prevailed, and the strongest was recorded on the 27th, averaging 11.1 miles an hour during 24 hours.

There have been numerous cases of diarrhœa and dysentery, especially in the winter months.

There were four deaths.

In January and February I attended three cases of small-pox. The symptoms in all were mild and ended in recovery. The disease was contracted by contact with affected passengers coming from Hongkong. From all the information I have been able to gather there were fewer cases than usual of this disease in Canton during the dry season; but in the country districts and surrounding villages small-pox prevailed extensively. The Cantonese do not appear to regard this loathsome disease with alarm, and one frequently meets convalescents in the streets whose features are incrusted with scabs and whose presence is in no way noticed by the passers-by.

In the absence of Dr. KERR I was summoned to the hospital to see a girl, aged 10 years, who had just been brought in from the country, where she had been injured by the horn of a buffalo seven days before. On examining I found a wound situated a few inches to the left and on a level with the umbilicus, through which protruded a portion of omentum as big as a large walnut. On cleansing the parts with a solution of boric acid I determined to return the protrusion—and succeeded, after having enlarged the wound, at same time taking care to prevent any blood from entering the abdominal cavity. The wound was closed with deep sutures. That evening her temperature rose to 100° F., but became normal the following morning. She had no other bad symptom, and left hospital convalescent after a stay there of 10 days.

CLINICAL STUDIES OF DISEASE AS OBSERVED IN CHINA.

CHAPTER II.

HEAT-STROKE.—"ARDENT FEVER."

THERE is almost always a surprise in store for the person who for the first time performs the autopsy of a case of heat-stroke. After observing, it may be, intense fever, congested and distorted features, maniacal excitement, epileptiform or tetanic convulsions, coma and stertor during the last hours of life, he expects to find the cerebral meninges gorged with blood, the brain hyperæmic or perhaps lacerated by hæmorrhages, and the ventricles full of fluid. On the contrary he will in the great majority of cases find the brain œdematous, and it and the membranes quite as pale as usual, if not paler, hyperæmia being confined to the sinuses and larger venous trunks in the membranes, without any sign of inflammation or of hæmorrhage. He will, it is true, find an excess of fluid in the ventricles; but the most striking pathological alterations will appear to have concentrated themselves mainly in the friable cardiac muscle, the over-distended right heart and the blood-laden lungs. He will further notice considerable effusion into the pleuræ and pericardium, and he will have observed that putrefaction began speedily after death and progressed with great rapidity, and that the blood throughout the body has remained fluid.

Using the term "apoplectic" in its usual but restricted sense, the affection is therefore in general not apoplectic in character.

In a case of the syncopal form (*see* page 31) occurring in a man with diseased vessels, reported by Dr. REID of Hankow,*

> On postmortem examination nine hours after death there were found enlargement of cerebral veins and sinuses, and an enormous serous effusion lying over the surface of the brain and elevating the membranes at some points to the height of half an inch. The arteries at the base were atheromatous, the lungs congested, and the left lung adherent throughout; liver and kidneys in a state of fatty degeneration.

The postmortem appearances in the following case, of which I find only a brief and unsatisfactory note, were exceptional:—

> M. S., sailor, aged 17, exposed himself to the sun on the 5th August 1872, and complained of headache and general malaise during the following night. At noon next day he was delirious, with a temperature in the axilla of 103° F., and subsultus. His condition remained unchanged until 4 A.M. on the 7th, when he became rational, his temperature having fallen to 102°.2. At noon he again fell into delirium, with a temperature of 103°.2, and from this point the temperature steadily rose until 4 P.M. on the 8th (4th day), when the thermometer in the axilla marked 108°, and the boy died.
>
> On examination the arachnoid was found opaque, with much serum beneath it on the convex surface of the brain; but there was no effusion at the base. The pia mater was greatly engorged, and

* Customs *Medical Reports*, xii, 15.

a firm clot occluded the right internal carotid artery. The brain substance was healthy, and the ventricles contained little or no serum. The left lung was excessively congested, blood pouring from it on section. The right lung was healthy. The heart also was healthy, and the cavities empty.

It is not easy, nor would it indeed be of much practical utility, to establish absolutely distinct types among the different forms under which the phenomena of heat-stroke manifest themselves. From the description which follows it will be seen that all the different forms overlap one another, cardiac and pulmonary symptoms being momentarily more prominent in one case and nervous symptoms in another.

I have chosen the term "heat-stroke," rather than that of "sunstroke," as the heading of this chapter, because the phenomena of ardent fever frequently present themselves at night and where there has been no exposure to the direct rays of the sun. But even this term "heat-stroke," though probably the best available, might be criticised on the ground that it implies too limited a view of the pathogeny of the affection; for there is some ætiological factor required besides mere external heat, else it would be impossible to explain why, out of a large number of men (*e.g.*, soldiers on the march) under identical external conditions, only a small ratio should be attacked by heat-stroke in any form. Moreover it is well known, as the result of accidental and laboratory experiments, that the healthy human body may be exposed with impunity to a much higher temperature than is usually assigned as the cause of attacks of ardent fever. "Many instances are on record of a heat of from 250° to 280° being endured in *dry* air for a considerable length of time, even by persons unaccustomed to a particularly high temperature." (CARPENTER.) Physical or mental exhaustion; prolonged anxiety; cardiac, pulmonary, hepatic, renal or cutaneous inadequacy; malarial cachexia; as well as the general and indefinable tissue degradation due to intemperate habits, are the chief personal elements which determine inability to sustain high degrees of external heat. There is undoubtedly a rapid fabrication of some deadly organic poison, whether sarco-lactic acid, as has been supposed, or some other, which paralyses the heat regulating centre; and it is fair to assume that where heat-stroke falls it finds the albuminoids of the tissues in a condition of abnormal molecular instability.* The well-known immunity of the Chinese, who expose their shaven heads to the fiercest heat of the sun, cannot be exclusively a gradually-developed racial peculiarity; the nature of their food, abounding far less than ours in nitrogenous constituents, must enter into the explanation.

Conditions of the environment conspiring to render heat intolerable are saturation of the air with moisture, and lack of ventilation, the latter becoming of primary importance when several persons are crowded into an insufficient space. As regards sensations of comfort and discomfort, and ability to work without injury or distress under high temperatures, everyone

* That excessive internal bodily temperature may occasionally be something merely superadded to the essential disease, and may be sustained for a considerable time without a fatal result, appears to be established by many well authenticated cases. See *Lancet*, 1875, i, 340 (122° reached on several occasions in a case of spinal injury in the dorsal region); 1878, ii, 658 (115°.8 in hysteria?); 1878, ii, 728 (107° after measles); 1879, i, 368 (108° in hysteria); 1879, i, 402 (111° after enteric fever); 1879, ii, 270 (116°.4 in hysteria); 1880, i, 641 (117° in hysteria?). Out of a vast number of cases of paradoxical temperature recorded of late years in the medical journals I have selected these as in the recital of each the precautions taken against mistake are enumerated. For a discussion of the whole subject of heat regulation by nervous centres, *see* VULPIAN, *Leçons sur l'Appareil vaso-moteur*, ii, 232 *sqq.*

who has travelled in China has learned by personal experience that in the dry atmosphere of the north summer heat which frequently reaches 104° in the shade and remains for several hours at or about that elevation is far more easily borne than 90° in Shanghai, where the air is laden with moisture.

1.—When heat-stroke is the product of any combination of these factors, direct and more or less prolonged impact of the sun's rays being absent, the attack may be of comparatively trivial importance or of the deepest gravity. But in either case there is usually time for treatment; and a considerable number of those attacked recover, even when the symptoms have been of the most menacing character.

2 and 3.—When, however, the sun has been allowed to beat on the head and neck and eyes—especially when, as is usually the case, this occurs during violent exertion in the open air—there appears to be a direct action of the sun's rays on the nervous centres, the victim dying with extreme rapidity from arrest of the heart's action, or after a longer interval from the development of hyperpyrexia, due to paralysis of the heat regulating centre.

1.—The first form may be regarded as exaggerated simple fever. All the symptoms described under that heading are aggravated. There is profound exhaustion. The temperature rises to 106° or higher; the pulse is generally quick and incompressible, in the graver cases slow and labouring. There is commonly an initial excessive secretion of urine with constant desire to empty the bladder; but later on the secretion may be altogether suppressed. There is more or less intense dyspnœa, expiratory as well as inspiratory. The superficial veins are distended. The skin is usually bathed in sweat, which gives a deceptive sensation of coolness to the hand; but it may be dry and pungently hot. The face may be congested or pale. The conjunctivæ are generally injected, the pupils sluggish or insensitive—dilated in the graver cases. There is twitching of the muscles, constant restlessness, and delirium with or without terror. Outbursts of hysterical laughter may alternate with stupor. In all forms severe pain, which may be referred to any of the muscular masses, is an early and constant symptom. When the patient is collected enough to specify more exactly the nature of his sensations he says that everything is swimming or dancing round him, and that there are fugitive dark patches in his field of vision. Every objective sound is intensified, and there is continual subjective bell-ringing in his ears. Headache and thirst torment him. There is a sense of impending death. Recovery is the rule; but convalescence is tedious, interrupted and often unsatisfactory. Loss of memory and melancholia are apt to supervene, and in any case the patient suffers for a long time from sleeplessness at night.

2.—When in consequence of direct exposure to the sun the heart's action is suddenly arrested, the patient, unless treated immediately and energetically, dies rapidly in collapse with all the symptoms and external appearances of intense shock.* This is the syncopal form.

* "I was an eye-witness to the terrible sufferings of the 98th Regiment on the occasion of the capture of Chinkiang-fu, the last military operation of the war in China, under Sir HUGH, afterwards Lord, GOUGH. The regiment arrived at the scene of operations only the day before, having come out from England in an over-crowded transport, under the command of an officer at that time without experience in tropical war. The men paraded for action in one of the hottest days of a hot season" (20th July 1842) "dressed as if for a show parade in Hyde Park. They had on landing to take possession of a steep hill of moderate height; before they reached the summit 15 men died on the spot from insolation, 'they gave a few convulsive gasps and died before anything could be done for their relief.'"—MACLEAN, *Diseases of Tropical Climates*, p. 143.

Respiration fails, but dyspnœa is not urgent, the "besoin de respirer" not making itself felt, or manifesting itself only by periodical gasps. The patient is generally unconscious, and urine is suppressed. The pulse is imperceptible, the lips blue, the skin pale or livid, cold, wet or at least moist. It is often difficult to distinguish these cases from the syncopal form of pernicious intermittent fever, when, for instance, a practitioner is called to a patient in a low-class tavern and can obtain no reliable history. In the syncopal form of cholera there is rarely if ever any loss of consciousness. However algid the condition during life may be, there is generally, if not invariably, a considerable rise of bodily temperature after death. When judiciously treated such attacks frequently terminate in recovery, and convalescence, though protracted, is usually complete.

3.—In the hyperpyrexial form there is rapid invasion of all the symptoms of the first form, but greatly intensified. The special symptoms may develop at once or after some hours, during which there may have been momentary promises of improvement. The temperature of the body rises to 108°, or from that to 111°. The pupils are pin-point, and in fatal cases generally remain so until within a few seconds of death. There may be epistaxis. The skin is dry and pungently hot; the finger-tips are violet. There are often large or small livid patches on the back, sides and calves. The rectum is emptied unconsciously. The lips are often covered with a pink froth, which fills the mouth, pharynx and air passages. Convulsions of an epileptic (sometimes tetanic) character are followed by coma and resolution in which the patient almost invariably dies.* If the patient seems to improve, fatal relapse is the rule, and if, where the extreme symptoms do not manifest themselves, he finally escapes death, he recovers with some permanent cerebral or spinal damage.

Dr. SOMERVILLE,† lately of Foochow, has noted many cases of abortive heat-stroke in which the most important subjective symptoms were vertigo and the feeling of "the train of ideas being interrupted and of one being absent from oneself" for a longer or shorter period. I have myself observed a case in which consciousness of a long drive on an excessively hot summer day was completely abolished, the individual on arriving at his destination remembering nothing from the moment of entering his carriage. Dr. SOMERVILLE describes his patients as "staggering and wild-looking, and obliged to catch at some object to prevent falling, the giddiness being usually associated with languor, headache, fever, and often with vomiting and diarrhœa.

In one instance—a seaman—consciousness was lost for a few minutes. The man was copiously drenched with cold water while ice was being procured. Presently he fell into a deep sleep. On waking next morning his ideas were clear, and there was no paralysis of any kind; but he had a severe headache, and was weak and shaky. He was quite well in about a week.

With this abortive form may be linked a chronic form in which the temperature is not excessive. A case of this was reported some years ago by Dr. REID, then of Hankow.‡

* Within my experience patients invariably die under the conditions described in the text. At Rangoon, however, in 1852, Deputy Inspector-General TAYLOR found that in cases of coma sometimes lasting from one to three hours, and in some instances attended with epileptic fits, not one terminated fatally. (TAYLOR, in *Lancet*, 21st and 28th August 1858; cited by MOREHEAD, *Clinical Researches on Disease in India*, 2nd edition, p. 608.) This experience is so exceptional as to be of little or no value in prognosis.

† Customs *Medical Reports*, x, 35.

‡ *Ibid*, xvi, 23.

The patient, feeling in perfect health, went out canoeing at 3 P.M. on the 30th July 1878—an intensely hot day—with his head protected with only a straw hat. He returned at 5.30 P.M. exhausted, and complaining of severe headache and feverishness. Next day he attempted to carry on his office work, but had great difficulty in doing so, on account of headache, drowsiness and hazy recollection of things; he also vomited several times after tiffin. July 31st (2nd day): 8 P.M., temperature 104°. Tongue covered with thick brown fur. Nausea and occasional vomiting. Face flushed, racking pain in forehead, drowsy and inclined to sleep in short snatches. Bowels not moved for two days. Urination frequent, scanty and with red deposit. A calomel purgative was administered, cold applied to the head, the patient placed in bed under a punkah, and told to take on awakening in the morning 10 grains of quinine. Bowels were moved twice in night. 3rd day: 8 A.M., temperature 104°; 4 P.M., pulse 110, temperature 105°; 10.30 P.M., pulse 90, temperature 103°.5. Ice bag has been applied to the head throughout the day and the body frequently sponged with cold water under the punkah. 30 grains quinine given by enema. The patient has been drowsy and delirious all day, waking when spoken to, but replies irrationally. Puts hand to forehead; wrinkles eyebrows constantly as if in pain. Eyes not congested; pupils normal. Catheter necessary. 4th day: very restless during the night; snatches of sleep and then starting up. 8 A.M., pulse 100, temperature 104°. Enema of castor oil and turpentine acted freely. Bath at temperature of 80°, with douching for 10 minutes, when the skin felt cool. 10 A.M., sleeping quietly; temperature 102°. 3 P.M., pulse 96, temperature 103°.2; again becoming restless. Bromide of potassium, 30 grains, was administered, and repeated at 5 P.M. Does not recognise those near him, replies at random to questions, but when requested puts out tongue. 9 P.M., very restless. Bromide of potassium with chloral, repeated at 10 P.M., induced a quiet night; but there was little sleep. The bowels were moved twice unconsciously. 5th day: pulse 88, temperature 102°. Very restless, but forehead now cool and skin moist. Constantly muttering and tossing. In afternoon, pulse 104, temperature 103°. 6th day: 8 A.M., pulse 76, temperature 100°. Jerking of extremities, especially of left side. Slept at intervals during the day, but would not reply to questions. Catheter no longer required, as there is involuntary micturition as well as defæcation. 9 P.M., pulse 96, temperature 101°. Bromide of potassium with chloral at 10 P.M. 7th day: 6 A.M., pulse 92, temperature 101°; 11.30 A.M., temperature 102°; 4 P.M., pulse 104, temperature 103°. Lies in a drowsy state, but takes liquid food readily. Has not spoken for two days. Quinine, grains 30. Ice reapplied to head. 9.30 P.M., temperature 101°. 8th day: 7 A.M., pulse 88, temperature 99°.4. Seems more observant of those around him. 5 P.M., pulse 88, temperature 99°.4. Answers now in a mumbling manner and incorrectly. Twitching, especially of left arm, and signs of suffering when it is raised. Lifts right arm in shaky tremulous manner to wipe the face. 9th day: 8 A.M., pulse 96, temperature 101°. Had a quiet night, sleeping at intervals. Quinine, grains 30. 5 P.M., pulse 100, temperature 101°.2. Won't submit to be turned on side. Skin moist. Slept from 9 P.M. to midnight, and then took a draught of chloral and bromide of potassium and slept till 7 A.M. 10th day: 7.30 A.M., pulse 96, temperature 101°. Recognises people round him, but wanders when questioned. Two pills of aloine and jalapine were given; one was swallowed and the other chewed without complaint of taste. Tongue projected to right in jerky manner and instantly withdrawn. Spasms now limited to left upper extremity. 4 P.M., temperature 102°. 9 P.M., temperature 103°. Quinine, grains 30. 11th day: pulse 108, temperature 103°. Cannot protrude tongue for more than a second, when it is snatched back into mouth; it is dry and brown. When raised a little in bed he cries as if in pain, and there is great tremor and spasm of extremities. A castor oil and turpentine enema acted freely. 8 P.M., quinine, grains 30. Slept quietly till midnight, and then had draught. 12th day: tongue moist; pulse 120, temperature 101°. Rambling about business. 4 P.M., pulse 120, temperature 102°. 13th day: quiet night after draught; pulse 100, temperature 101°. 6 P.M., pulse 116, temperature 102°.2. Slept during the greater part of the day, and retains urine. 14th day: in forenoon pulse 108, temperature 101°. 5 P.M., pulse 116, temperature 102°. 9 P.M., pulse 120, temperature 103°. When raised in bed there is great tremor of extremities and not the least power

of supporting himself. 15th day: quinine, grains 30, at 6 A.M. 8 A.M., pulse 96, temperature 101°. 9 P.M., pulse 100, temperature 101°.2. Complains of pain all over body and extremities. Tongue choreic. The temperature ranged between 99°.2 and 103° up to the 26th day, after which it did not overpass normal limits. On the 22nd day he sat up for a short time in bed, but delusions and hallucinations were abundant. On the 27th day questions were answered with some degree of intelligence. On the 37th day he tried to write his name, but could not form letters or recollect how to spell it. Two days later he wrote his name distinctly. From this date there was a steady improvement in mental symptoms, and the patient left for Europe. The later treatment consisted in occasional large doses of quinine when the temperature rose over 100°, a mixture of iodide of potassium and a chloral draught with bromide of potassium when required. It may be added that the patient was a temperate man of good physique and free from constitutional disorders.

The diagnosis of heat-stroke from acute alcoholism is not always obvious.

In October 1874 a fatal case of acute alcoholism occurred in my practice. Had I not been acquainted with the history through many months, and had the final seizure taken place during July or August, I should have been unable to say that it was not a case of heat-stroke. There were present pungent heat of skin, frequent micturition, constant nausea, congested conjunctivæ, lividity of the surface, irregular pulse and respiration, great restlessness, muttering delirium and contracted pupils. Death was due to failure of the heart. Had the atmospheric temperature been high the restlessness would probably have been exchanged for convulsions and coma.

The two conditions are frequently combined. Thus, it was specially noted that in nearly every one of 12 cases of sunstroke admitted to the Shanghai General Hospital in 1872, out of whom eight died, the patient had been indulging freely in alcoholic liquors, these beverages being probably of poisonous quality apart from the alcohol they contained.

The symptoms of heat-stroke in children do not require any special description. As might be expected from the greater predominance of the spinal system in early life, convulsions are of invariable occurrence in severe cases of all forms; they are more likely to be tetanic than in the case of adults; and they are not of such grave prognostic significance. There is occasionally prodromal diarrhœa.

Turning now to the question of treatment:

1.—In the first form all the factors entering into the attack should be considered. The room should be cleared, darkened, and as far as possible cooled and ventilated by opening all the doors and windows and working a punkah, if one is in readiness. Ice should be applied to the patient's head and neck, 15 grains of calomel laid on his tongue, and, if he is conscious enough to drink, iced seidlitz water from which the gas has escaped should be given as a beverage. Meanwhile an enema of 15 or 20 grains of quinine suspended in a couple of table-spoonfuls of milk may be given, and repeated after the bowels have been evacuated.

2.—In syncopal cases the patient should at once be removed into a sheltered place, sedulous care being taken to avoid sitting him up or imparting sudden jerks to his body. He should be stripped naked and energetically rubbed with flannel cloths. A subcutaneous injection of sulphuric ether should be given as soon as possible, and meanwhile a mustard plaster or a sponge wrung out of scalding hot water should be applied to the præcordia. A copious enema of iced water should be administered, followed on its expulsion by one consisting of an ounce or two of brandy with 15 grains of quinine mixed with a beaten-up egg.

The patient should be frequently and gently rolled to one side and the other alternately, for the purpose of lessening the chance of complete stagnation of blood in the lungs. These cases require careful watching, as secondary fever is almost certain to occur should the original attack be successfully combated.

3.—Whether the hyperpyrexial form declares itself immediately or after a longer or shorter interval, the obvious and urgent danger to life lies in the intensity of the bodily heat. Undivided attention should therefore be directed to lowering the temperature. The patient should be gently but rapidly stripped,—carefully keeping his body horizontal,—and laid on the ground, or preferably on a bamboo couch. Ice should be packed round his head and along his spinal column, cold water dashed over him from a height, while a couple of quarts of iced water should be pumped into the colon, and the enema repeated as soon as the water first administered is expelled. At intervals between the douches fanning should be vigorously kept up by three or four assistants, crowding round the patient being prevented. FAYRER leaves it an open question whether in cases where the imminence of death is clearly due to a distended right heart a moderate venesection may not be called for, but as a general rule the abstraction of blood is disastrous. On the other hand Dr. GÉRAUD* relates some striking instances wherein, in the absence of other means of promoting the circulation, the withdrawal of 10 ounces of blood from men in a desperate condition had an excellent effect. In three cases a further depletion to 7 ounces was necessary, followed in one case by wet cups and leeching. Nine cases are recorded with eight recoveries. The hypodermic injection of ether will help the heart to force on its contents; but here probably, as in cholera, there is speedy formation of some toxic substance which closes the pulmonary capillaries. The douches should be suspended as soon as the rectal temperature falls to 103°.

There is a case recorded by Dr. WESTBROOK, of St. Mary's General Hospital, Brooklyn,† which he describes as belonging to "the severest type of sunstroke;" he had "never before seen so bad a one recover." The subject was a young Englishman, 22 years old, of very robust habit, who, after working out of doors all the forenoon of a day when the thermometer registered 99° F. in the shade, became comatose and convulsed after reaching his home at midday. Coma was profound, the bowels had moved spontaneously (unconsciously?) and free vomiting had occurred. The rectal temperature was 109° F. Half a drachm of antipyrin was injected hypodermically and ice was applied to the head. In less than an hour the rectal temperature fell to 107°.5. Cold was applied to the head and body by means of towels wrung out of iced water, and a second dose of ½ drachm of antipyrin was injected. 30 minutes later the rectal temperature was 99° F., when the cold applications were discontinued, dry heat was applied to the surface, and whisky was injected subcutaneously. Shortly afterwards the surface was cool, coma profound, all the limbs twitching, head congested, pupils contracted but responding feebly to light, respiration irregular and accompanied by a loud expiratory groan. Half an ounce of whisky was given hypodermically. Within half an hour the surface became warm, twitching became more marked, and a series of violent tetanic convulsions occurred which were controlled by chloroform. Blood to 13 ounces was withdrawn from the median basilic vein. There were no more violent convulsions, and 40 grains of chloral hydrate was administered by the rectum and retained. The axillary temperature was now 103°.75. Half an ounce of

* *Archives de Médecine et de Pharmacie militaires*, 1888, ii, 23.

† The report is in the *New York Medical Journal*. It is reproduced in the *Indian Medical Gazette* of December 1885, page 394, from which my knowledge of it is derived.

LENTE'S solution of quinine * was injected hypodermically in doses of 1 drachm every two hours. Eight hours after the onset of symptoms, slight convulsions still continuing, six leeches were applied to the temporal region, 20 grains of antipyrin was injected hypodermically, and 40 grains of chloral hydrate administered in enema. Two hours later the patient became sufficiently conscious to partially respond when spoken to. He slept quietly, and next morning his temperature was 99° F., and from that out remained normal. He continued in a state of hebetude until the 3rd day, when consciousness was completely restored. During the 2nd day he had 40 grains of bromide of sodium every two hours and 5 grains of sulphate of quinine every four hours.

The case is interesting as showing from how desperate a condition recovery is possible; but the reporter puts it forward as an illustration of "the use of antipyrin in sunstroke"—a claim which cannot safely be admitted, considering the variety of treatment to which the patient was subjected.

A second successful case in which the symptoms were similar is also reported by the same writer. The rectal temperature was 110° F. The treatment consisted in antipyrin and quinine subcutaneously, ice to the head, whisky and chloral by enema, and bromide of sodium and quinine by the mouth when the urgency of the attack had abated.

To any deduction as to the curative value of antipyrin in this second case the same objection may be made.

It is a question whether inhalations of ether or chloroform should be tried in order to calm the convulsions. Successes so far as the symptom is concerned are on record. I have not ventured on either drug. The condition of the heart has seemed to me to contra-indicate chloroform, and if it be true that the pulmonary capillary walls are already in a condition of spasm, the initial effect of the entrance of ether vapour into the alveoli might intensify the apnœa. Besides, the convulsions are probably only symptomatic of (*a*) cortical irritation from the languid circulation of superheated blood through the cerebral vessels, or of (*b*) cerebral anæmia from block in the lesser circulation, whereby the controlling action of the brain on the spinal centres is abolished, or of (*c*) excitation of NOTHNAGEL'S hypothetical "convulsion-centre" by carbonic acid laden blood. In either case the convulsions in themselves are probably of small moment; the general condition is of all importance.

Should recovery take place, treatment of the sequelæ must be conducted on general principles. The patient will probably be obliged to remove to a cool climate, either temporarily or permanently, and almost invariably he retains for his whole lifetime an exaggerated sensitiveness to exposure to heat and to the action of alcohol.

CASES OF HEAT-STROKE.

Simplest Form; Ardent Fever.—D., missionary; aged about 45. Had been much exposed to the sun on the 7th August 1878, and late in the evening had retired to a small ill-ventilated room to write letters. About an hour after he had shut himself in he was heard to fall from his chair, and on entering the room his servants found him extended on the floor partly insensible, and making no attempt to rise. He was carefully removed to a cool place and his clothing loosened. When seen an hour later he was nearly insensible; but could be roused to signify that he heard questions, but not to answer them. At intervals he groaned out complaints about his head. His face was congested, lips blue, pupils contracted; his body was

* I have been unable to ascertain the composition of this solution.

dry, livid in patches and burning hot; his hands and feet were cold. There had been no action of the bowels. Temperature in rectum, 106°.2; pulse about 150, but hard; breathing shallow, rapid, not irregular. 15 grains of calomel was laid on the tongue, and a large castor oil and soap enema administered. Ice was applied to the head and spine, and the trunk and limbs were vigorously rubbed with dry cloths. After evacuation of the bowels 25 grains of quinine was thrown into the rectum. Lividity began to disappear from the surface of the body in about half an hour, the hands and feet regaining warmth at the same time, and the pulse becoming softer, though retaining its rapidity. The rectal temperature was still 106°. Rubbing was continued, and half an hour later lividity left the lips, and consciousness returned. The rectal temperature was now 105°. Ice was kept applied to the head and spine and the patient was left quiet for about 20 minutes, when it was noticed that the breathing, which had greatly improved, was assuming a sighing character. The temperature had risen to 105°.5. A long tube was thereupon carried for 10 inches into the rectum and about 4 pints of iced water injected. This roused the patient, who showed manifest signs of resenting the treatment. The water was shortly afterwards expelled, and slight perspiration was noticed on the chest at the same time. No further treatment was necessary. The temperature fell steadily to 100° within two hours. Consciousness was completely regained, and a very copious and horribly offensive stool was discharged. Sleep was disturbed for several nights; but convalescence was completely established within a week.

Transition Form; wild Delirium.—W., female, aged 30; missionary. Had been shut up for a couple of hours in a hot, filthy, and crowded room with a dying Chinawoman early in August 1884, after which she walked home—a distance of about a mile—at 3 in the afternoon, sheltered by an umbrella, but without coloured glasses. Malaise all the evening. At night burning skin, restlessness, delirium, intense muscular pain. Seen at 4 A.M. Temperature in axilla, 106°.2. Skin moist, expression wild, face pale, lips colourless, jugular veins distended. Complaint chiefly made of intense headache. The pulse was hardly perceptible, and was intermitting. The catamenial period was a week overdue; but this was a common occurrence. A hypodermic syringeful of ether was injected, ice was applied to the head and neck, an enema of castor oil administered, followed by an enema of iced water carried high into the bowel. The water was retained about 20 minutes, and after its expulsion a small enema of milk containing 20 grains of quinine was given. At 8 A.M. the temperature as registered in the axilla was 104°.6, but was probably at least 1° higher; dyspnœa was intense; skin dry; maniacal delirium. The greater part of the patient's hair was cut off, she was carefully removed to a couch on the verandah, and her head and neck douched with cold water. The surface was now livid. Large and small bubbling râles were audible all over the chest. She was energetically rubbed with bath gloves, and a current of iced water kept running through the lower 12 inches of the rectum. Ether injection repeated. After an hour of this treatment she became rational, and asked to be put back into bed. All lividity had left the surface. Respiration was much easier, 30 in the minute. The temperature in the axilla, which had been carefully dried, was now 102°.8. Immediately on removal to bed she passed a considerable quantity of urine unconsciously. The quinine enema was repeated. At 3 P.M. the temperature had fallen to 101°, respiration to 24, and the pulse was full and soft. Both eyelids were much ecchymosed. Recovery was very slow; and for several months the patient's friends observed an irritability of manner and subdued excitement which were foreign to her character. She eventually returned to Europe, where she arrived perfectly well.

Syncopal Form.—L., missionary. Had been ailing indefinitely on the 8th July 1889, an exceptionally hot day (temperature 100° in the shade); but felt well enough to walk in the open air in a large paved and unsheltered courtyard during the following forenoon. He suddenly became insensible and fell. Ice was applied to his head while assistance was summoned. When seen very shortly afterwards he was breathing stertorously and was pulseless. Suddenly he became livid, and before any treatment could be instituted he was dead.

Hyperpyrexial Form.—A lady, aged 24, was confined at term of her second child on the 6th August 1874, and made an excellent recovery. She went out in a sedan-chair on the 18th day, and continued to do

so regularly until the 22nd day. She was perfectly well in the afternoon of that day (28th August), and went out earlier than usual—about 4.30. It was subsequently recollected that she complained of the intense heat while out, had made some incoherent remarks, and that for a while her lips had been of a leaden hue. On her return home she walked upstairs unassisted. She retired at 9 P.M. and slept till midnight, when she woke and continued restless until 4 A.M., passing much urine in the meantime. At 4 A.M. she asked for and drank a glass of milk and soda water. She then went to sleep. At 7.30 A.M. she woke; but evidently failed to recognise anybody. At 8.30 A.M. I found her in a room with the doors and windows all shut and the air intensely hot and foul. She was lying on her back, snoring deeply, with respiration greatly accelerated, cheeks flapping during expiration, fauces full of mucus, conjunctivæ insensible, no strabismus, pupils contracted and insensible to light, face pale, lips livid, no distortion of mouth, skin of trunk livid and burning, feet cold, hands cool, complete resolution of limbs, no twitching of tendons, could be very slightly roused. Pulse running, with distinct pauses. In the axilla, not tightly pressed, the mercury went up in a minute and a half to 110°.4, the limit of my thermometer; the internal temperature was therefore certainly not less than 112°, and was probably higher. She was placed in a bath in which lumps of ice were kept floating and douched with iced water, while the surface of the body and limbs was energetically rubbed. No effect, however, was produced. Coma gradually deepened, and she died at 11 A.M.

Heart Failure on Movement.—S., about 45 years old; merchant. Seen at 1 A.M., 2nd August 1886. The temperature of the air had been extremely high for some days. Had felt ill through previous afternoon; but had insisted upon lying on a very hot, ill-protected verandah. About 11 P.M. he had gone into his room and seated himself in a chair, where he was supposed to have gone to sleep. At midnight it was noticed that he could not be roused. I found him propped up in a chair, deeply comatose, blue, pulse hardly perceptible, breathing stertorously, cheeks flapping, skin burning; pupils moderately dilated, insensible to light. He had vomited and had had an involuntary evacuation of the bowels. The case was probably hopeless, but there appeared to be no reason why immediate death should occur. The room in which I found him was crammed with furniture, and every available spot was crowded with Chinese and half-castes, who could not be expelled. The air was indescribably hot and foul. It was obviously necessary to move him to a more suitable place; but in the act of carrying him one of the coolies employed allowed his shoulders to slip, so that his body was violently and suddenly jerked. There were one or two spasmodic gasps, and life was extinct.

Tonic and Clonic Convulsions in an Infant.—F., female, 2 years and 9 months old, was carried into the sun by an amah early in the afternoon of a hot September day in 1883 and kept unsheltered for about an hour. The child vomited, which drew the amah's attention to the fact of its being ill, and when brought into the house it was found to be unconscious. General convulsions supervened within half an hour. When seen, exactly an hour from the occurrence of vomiting, the infant was deeply unconscious, convulsions were continuous (in this sense, that between each violent fit the muscles did not relax), the skin was dry and pungently hot, and the temperature in the rectum was 108°.5. The rectum had been emptied at the beginning of the attack. The pulse could barely be felt as a flutter, and the pupils seemed to be contracted, but could hardly be got into view. The child was stripped naked and laid on a bamboo couch. Ice bags were applied to the head and neck, and cold water was dashed over its body from a height. A thermometer was retained in the rectum and read every five minutes. Within 20 minutes the temperature had fallen to 105° F., and relaxation between the convulsions was observed. The douches were thereupon stopped, a light blanket was thrown over the body and a large enema of iced water administered. This brought away a copious evacuation containing a dead lumbricoid worm. The enema was then repeated, and retained for 10 minutes by occlusion of the anus. 15 minutes after its escape the temperature in the rectum was 101°, the convulsions had ceased, and the child began to show signs of returning consciousness. Its body was now rubbed dry, a sinapism the size of a

dollar was laid over the base of the heart, and 5 grains of quinine in a teaspoonful of milk thrown into the rectum. A teaspoonful of whisky was given in 5-drop doses every quarter of an hour. After the third dose attempts at swallowing were made, and it was then given diluted with water. Four hours from the commencement of the attack the child was sufficiently conscious to indicate that she wanted to be put into bed. The pulse could be counted, and its beat was regular; the temperature in the rectum was then 100°. The night was restless. Next day the temperature had fallen to 99°, and for more than a fortnight it fluctuated between 99° and 101°. Convalescence was then slow and unsatisfactory, and removal to cooler air than could be found in Shanghai was imperative. It was not until after a trip to Chefoo and the advent of autumn that health was thoroughly re-established.

Tetanic Convulsions in a Child.—J., male, aged 4, was missed from his nursery one July afternoon in 1878 and was discovered partly insensible crouched outside one of the bamboo blinds of a southern verandah. How long he had been exposed to the sun was not ascertained. On being removed to a couch he vomited and immediately became unconscious, and within a few minutes convulsions of tetanic character declared themselves. The lower bowel had emptied itself. Ice had already been applied to his head when I saw him half an hour later. The child was breathing stertorously and irregularly; lips blue; face white; skin dry, livid, and pungently hot; pulse imperceptible. The act of stripping him brought on a violent tetanic spasm, opisthotonos being well marked. He was immediately douched, and an ice bag applied to the spine. The temperature could not be ascertained, as an attempt to introduce a thermometer within the anus induced a spasm of terrific violence of the whole body. Vigorous rubbing of the surface with bath gloves dipped every now and then into iced water did not induce convulsion. After about 20 minutes the skin of the trunk had regained its natural colour. The child was now covered with a light blanket and a thermometer successfully introduced into the rectum. The temperature was 106°. It was at once withdrawn, and a large enema of iced water administered and retained for 10 minutes by pressure on the anus. A slight general convulsion expelled it along with a considerable quantity of fæcal lumps. The breathing was now regular, but rapid and shallow. Large moist râles were audible everywhere in the chest. The heart was beating 180 to the minute with considerable force; but the radial pulse could be felt only as a mere flutter. Nothing more was done for half an hour. There were no convulsions, though the fingers and toes twitched frequently; the lips were gradually losing their lividity; and respiration was gaining in volume. Unconsciousness was still absolute. The temperature in the rectum at the end of this half-hour was 103°.8. The child was now rubbed dry and wrapped in a blanket. An enema of 20 grains of bromide of sodium with 10 grains of bromide of quinine was administered, and whisky in doses of 10 drops was poured on the tongue every 10 minutes. An hour later consciousness began to return, and about six hours from the beginning of the attack all immediate danger was over. Convalescence was protracted, but was apparently perfect after a prolonged change to a cooler climate.

This child remained for four years under observation, and has since been frequently heard of. He suffers from no mental defect; but he is extremely sensitive to heat and glare, the least exposure to either bringing on intense headache. He is irritable and has paroxysmal attacks of sleeplessness.

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