China from a medical point of view in 1860 and 1861 : to which is added a chapter on Nagasaki as a sanitarium / by Charles Alexander Gordon.

Contributors

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Royal College of Physicians of Edinburgh

Publication/Creation

London : J. Churchill, 1863.

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CHINA.

CHINA

FROM

A MEDICAL POINT OF VIEW

IN 1860 AND 1861,

TO WHICH IS ADDED A CHAPTER ON

NAGASAKI AS A SANITARIUM.

BY

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BIBLIOTH. COLL. REG. MED. EDIN.



LONDON:
JOHN CHURCHILL, NEW BURLINGTON STREET.
MDCCCLXIII.

LONDON:
PRINTED BY J. E. ADLARD, BARTHOLOMEW CLOSE.

PREFACE.

THE late expedition to China has afforded opportunities not heretofore available to Englishmen of making observations, upon a tolerably extensive scale, in regard to the climate of several portions of that great but disorganized empire, of inquiring into the various productions of its soil, and of investigating the phenomena of disease, as well as its ravages among our troops employed there.

In the following pages I endeavour to give a faithful record of my observations in regard to these matters, introducing, from time to time, as I proceed, such remarks upon various other subjects as I think likely to interest the reader.

If we may judge from the present aspect of affairs in China, further military operations there may confidently be looked for. Probably no expedition was ever more completely fitted out in all its departments, and certainly none could have been more successful, than the one sent out to avenge our disasters at the mouth of the Peiho. In the following pages may, it is hoped, be found hints that are calculated to show how, on a future occasion, the medical arrangements may be conducted in the

event of hostilities continuing there; and it is hoped that the plan adopted, of giving the medical statistics for each month separately, will form a guide as to the casualties that may for the future be expected, and for the probable amount of reinforcements necessary to maintain the numerical strength of an army there.

At the recommendation of the publisher, several statistical tables have been omitted, their results being embodied in the work itself.

The meteorological observations will, it is hoped, be found not without value as a contribution to this branch of science.

I regret it will not be in my power to examine the proofs as sent by the printer; this duty must be delegated to some person else, as I am about to proceed on foreign service. I therefore trust that, should typographical errors be discovered, the reader will be so good as to make some allowances on account of the circumstance mentioned.

C. A. GORDON.

DEVONPORT; *July*, 1862.

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CHAPTER I.

INTRODUCTION.

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WHENCE comes the word China—the name of that great empire, to some peculiarities connected with which I desire to devote the following pages? According to one author (Williams) it is said to be a corruption of Tsin, a family whose chief first obtained sway over all other feudal principalities about 250 B.C., and whose exploits rendered him famous in India, Persia, and other Asiatic states.

The Malays, Hindoos, Persians, Arabians, and other nations of Asia, have known the country by no other names than Jin, Chin, Sin, Sinæ, Tsinistæ, or others similar; and these names derive additional importance from the light they throw upon the prophecy contained in Isaiah, chapter xlix, verse 12, as indicating that by "the land of Sinim," the Chinese are the people pointed at as ultimately to be brought within the pale of the church. A doubt is, however, it must be confessed, thrown upon this interpretation if we refer to the chronology of the

Bible. We there find that the prophecy referred to was uttered B.C. 712; namely, 462 years before the time when, according to the authority above stated, the distinctive name was given to the people to whom the prophecy is by some believed to refer.

Chee Wang, prince of Tsin, although, like many conquerors of later times, a cruel man, was undoubtedly a great one; not only did he subdue the entire empire, but he excavated many canals; and, with a view of preventing the incursions of the Huns, he erected the great wall, or rather completed it by uniting the walls and towers that had been already built by the northern princes.

By what name the country was known during the immense period that intervened between the time of Isaiah and that of the family of Tsin, cannot now, it seems, be ascertained with precision; we know, however, that the Chinese, as a people, are among the most ancient of all regarding whom history informs us; they have seen the rise and fall of many of the ancient nations, whose records still remain, they have, in fact, existed as a nation far longer than any other with whom we are acquainted; their days have truly been long in their land, and the coincidence is, to say the least of it, remarkable, that the Chinese, as a people, rigidly carry out the injunctions of the first commandment with promise; with them, honour to their fathers and mothers is made the grand principle upon which all government is established, nor does this honour cease with life of the parents, the names of their ancestors are worshipped through many generations.

It is not my intention to enter at length into the history of the country; volumes upon volumes are available, written by the Jesuit missionaries, upon this subject. It is only necessary, with a view to carry out the plan I have laid down for myself in these brief remarks, to give a few of the great landmarks of that history as obtained from various authorities whom I have consulted upon the subject.

The earliest personage mentioned in Chinese history would appear to be Fo, Fuh, or Fuhi. He is held in high veneration still, for although, according to Meadows, the introduction of writing is referred to others, Fuhi seems to have introduced the

use of the symbolical characters still used there, although now much modified and altered.

The period when this took place is said to have been about the year B.C. 3337, a date which approximates to that to which is assigned the birth of Shem, Ham, and Japhet, and these events, it may be mentioned, took place not later than 172 years before the scriptural deluge. From this circumstance, therefore, taken in addition to others tending to the same conclusion, there are not a few who entertain the conjecture that Fuhi was none other than Noah.

I shall only mention one or two other important changes which Fuhi introduced into China. He it was, we learn, who first introduced among the people the division of the day into periods of two hours each; he also, it was, who introduced marriages and separate families among them—measures which certain "socialists," about five thousand years afterwards, and in a country which boasts of its civilization, would destroy if they could.

As we shall see hereafter, under the subject of the religions of China, Fohi is often mentioned in connection with Buddhism, I will therefore only observe in this place, that we read of one "Foh," who was the son of a prince of India, that he was born about 1200 years before the Christian era; that he was called Cheka or Xaca to the age of thirty, when he took the name of Foh; and that "there appears to be little doubt that this Fohe is Vishnu in one of his pretended incarnations, namely, his ninth avatar." Unless, therefore, we suppose that two worthies of the name of Fohi are confounded together in Chinese history, we must, I fear, look upon Fohi as a myth.

And yet there are authors who inform us that "Chinese mythological history *ends* with the appearance of Fohi. According to Chinese annals, this took place about B.C. 2852, a period, be it observed, 475 years later than the one already given. Supposing that this date now given is the correct one, it represents a time eight years after the birth of Enos, 1152 years after the creation, or, according to Ussher, 508 years before the Noachian deluge. These dates are given in this place as the result of inquiries among different authors; how far they can be depended upon, must rest with individual readers; one

thing, however, is incontestible in the history of China, namely, that at a very early period its people had attained a degree of civilization far above that of their contemporaries of other nations; and in regard to their literature and laws, we learn from Meadows that "authentic records of ethical and political documents in China extend back to B.C. 2357."

The period to which history traces back the existence of China as a nation, is usually referred to about the year 2206 B.C. at this time the first dynasty, namely, that of Yu the Great, or, as he is generally called, Hia, became established. It is usual to say that the people by whom this dynasty was established were the Elamites, who may be considered identical with the Persians, these being, it is almost needless to remark, descended from Elam, son of Shem, who was third son of Noah.

I shall have frequent occasion, as I proceed with these notes, to allude to the evident affinity observable between ancient Egypt and China. I would, therefore, now invite the attention of the reader to the circumstance that the date assigned by Baron Bunsen ('Egypt,' vol. ii, p. 458), as that when Misraim, the son of Ham, began to reign in that country, was Anno Mundi 2776, that is, 1228 B.C.

Adverting once again to the origin of Chinese written characters, the honour of this invention is not accorded to Fuhi by universal consent; there are two other worthies who with him divide the opinion of the learned upon this point. By some the discovery is assigned to Hwangti, one of the primæval monarchs, by others to Tsangkieh, a statesman of the same period, that is, according to Chinese chronology, of about 2700 years B.C. He is said to have derived the first ideas which led to this important invention from careful observations of the varied forms in nature, which he endeavoured to imitate, in order to cultivate a better mode of recording facts than the *knotted* cord then in use.

The description of writing first employed was ideographic, that is, expressing ideas by symbols, this being, in fact, the second class of Egyptian hieroglyphics (the first class being, it need hardly be observed, the representation of objects by symbols). In process of time, however, the greater part of the Chinese written characters have become simply phonetic.

A cursory inspection of these characters will be sufficient to show their evident affinity to those of the ancient Assyrian, and more especially to the Hebrew characters; the evident affinity of these to the Egyptian being again matter of remark by all sinologues; thus, therefore, we trace in all indications of their semitic origin; we find, however, a coincidence more remarkable than this between China and Egypt, this being the method employed in both of dividing chronological periods into cycles of sixty years each. This remarkable system of dividing time is said to have been established in China by Hwangti, in the year B.C. 2637, that date corresponding to the year 518 after the Flood, 82 years after the death of Arphaxad, and about the same time before the confusion of tongues.

We are informed that the hieroglyphic writing upon the Rosetta stone refers to the cycles of sixty years, and demi-cycles of thirty years, which were respectively recognised in the calculations of the Egyptians. A similar system may be traced through India to China, Thibet and Mongolia; and this circumstance adds strength to the conjecture that China was, as already mentioned, brought under subjection from the west, if indeed it was not originally peopled in that way.

Huc enters tolerably fully into a history of the sexagenary cycle as employed by the Chinese, Mongols, and most of the peoples in eastern Asia. He also gives the "roots" upon which the two smaller cycles are formed, namely, the denary or system of five elements, and the duodenary or that of twelve animals. It is no part of my intention to reproduce at length what has already been written upon this subject; yet I believe an epitome of the system will not be uninteresting to the student of Chinese history.

According to this author, the smaller, or denary cycle, is formed by a repetition of the name of each of the five elements, which are by the Chinese enumerated thus:—1, Wood; 2, Fire; 3, Earth; 4, Iron; 5, Water; and by the simple process of repeating these, we of course obtain double their original number, thus:—1, Wood; 2, Wood; 3, Fire; 4, Fire, and so on.

As regards the larger, or duodenary system, it is composed of the names of the following animals, namely:—1, Mouse; 2, Ox;

3, Tiger; 4, Hare; 5, Dragon; 6, Serpent; 7, Horse; 8, Ram; 9, Monkey; 10, Fowl; 11, Dog; and 12, Pig.

To form the full cycle of sixty years, these two are combined in the following order: namely, 1, Wooden Mouse; 2, Wooden Ox; 3, Fire Tiger; 4, Fire Hare, and so on, until the tenth double number is completed. The eleventh year of the cycle then commences with the first element and the eleventh animal thus:—11, Wooden Dog; 12, Wooden Pig. The first enumeration of the twelve "sacred" animals being thus completed, the thirteenth year obtains its distinctive name from a combination of the next element in order after wood, and the first animal on the list; thus it is called Fire Mouse; and upon a similar plan are the names of the five elements, and the twelve animals, combined, until the sixty years constituting the cycle are completed.

Before passing on to other subjects connected with China, which I propose to allude to, I would for a little enumerate a few of the particulars that seem to me most interesting as connected with the early history of this vast country. Some of these may most conveniently be given in chronological succession, thus:

B.C. 2852. The reign of Fuhi is said to have begun, and mythological history of China to have ended.

— 2637. Hwangti establishes the sexagenary cycle.

— 2293. An overflow of rivers in the north of China (the Yellow River) took place. The Noachian deluge, it must be remembered, occurred B.C. 3155, and that of Xisurthus B.C. 2297.

— 2205. Shun, the seventh in succession after Fuhi, believed to have been the last of the Chinese travesties of the eight antediluvian patriarchs, dies.

— 2205. Yu, the Great, the first after the antediluvian patriarchs, and founder of the Hia dynasty, began to reign.

— 1766. The Shang dynasty began, this being about 120 years before the exodus of the Israelites from Egypt.

B.C. 1198. Wu Yih, the then emperor, began to worship images; this date corresponding to about four years after the death of Samson.

— 1112. Duke Chan is reputed to have invented the compass.

— 1122. The Chan dynasty began.

— 249. The Chan dynasty ended.

— 246. The Tsin dynasty ended.

— 202. The after Tsin dynasty ended, and the empire was ruled by monarchs of the Han and eastern Han dynasty from B.C. 202, to A.D. 221.

Passing over the important events which form the history of China during what we may call the middle ages, it is only necessary for my present purpose to remark, that the Yuen dynasty was established by the descendants of Gengis Khan. They were expelled by the native or Ming dynasty in A.D. 1368, and it having, after a continuance of 276 years, become very unpopular, was overcome in 1644 by a Chinese rebel, named Letse Ching, who then entered Pekin, the emperor committing suicide.

The Manchoos, after a struggle of seven years, reobtained power; they then garrisoned Pekin and other cities with Tartar troops. High posts were given to Tartars, to the detriment of native born Chinese, and hence the unpopularity of this dynasty, of which Hien Fung, under whom the wars with England of 1857-58-59 and 60 took place, was the seventh monarch. He began to reign in 1850, died in 1861, and was succeeded by his son (by a "handmaid"), a child of six years of age. This child assumed as his throne-name the title of Chee Seang, or "happy omen," thus giving an example of a custom which, according to Bunsen (vol. ii, p. 478), was in use among the ancient Egyptians.

It is said that this young monarch, on succeeding to the empire, had three years added to his life; namely, one from heaven, one from earth, and one from his councillors or ministers. It is inconceivable by what train of thought, other than a desire deliberately to impose upon the vulgar, the ministers

could have deliberately made such a declaration as this, carrying as it does so great an absurdity upon its very face.

China, as is well known, is interesting on other accounts than mere antiquity. Some of the ornamental arts flourished there at a time when our British ancestors tattooed their bodies and dressed in skins of animals, and some of the customs established in what to us seem as the very early ages, are still most rigidly followed.

Of the products peculiarly Chinese, silk at once presents itself as one of those that are most important. This material, it is almost needless to remind the reader, was used by the early Assyrians, having doubtless been conveyed overland to Nineveh and Babylon from China; under the name of *Meshi*, it occurs in Scripture, namely, in Ezekiel xvi, 10. It is also mentioned in Proverbs xxxi, 22; is enumerated in the statutes of Menu (vol. 120, chap. xii, sec. 64); these having been written about the twelfth century before Christ. According to the Chinese themselves its invention is referred to the Empress Siling, or Yulu-fi, wife of the emperor Hwang-ti, B.C. 2602, and some authors assign to it an antiquity even greater than this. According to Williams, credible notices of the cultivation of the mulberry tree, and manufacture of silk in China, are found of a date as far back as B.C. 780.

About A.D. 550, two Persian monks who had long resided in China, encouraged by the promises of the Emperor Justinian, succeeded in conveying the eggs of the silk moth to Constantinople, and thus added a new and important branch of industry in Europe. Equal in importance to the silk of China is the tea plant, which up till very lately was solely cultivated in that country. From what is now to be learnt regarding its history, a knowledge of it seems to be of comparatively recent date, even among the Chinese themselves, for it cannot be traced back to an earlier date than about A.D. 350, and its general introduction into use did not occur earlier than the year 800. This herb would appear not to have been known by the Greeks or Romans, nor were our ancestors acquainted with it prior to the sixteenth or seventeenth century, for we learn that it was for the first time imported into Europe not long before the year 1650, by the Dutch.

One of the peculiar customs which time has in a manner consecrated in China, notwithstanding the great amount of personal inconvenience occasioned by it, is that of compressing the feet of women. The origin of so strange and disagreeable a custom cannot now be traced with certainty. According to some accounts it arose from a desire "to pattern the club feet of a popular empress; others state that it gradually came into use from the great degree of admiration shown to, and a desire to imitate delicate feet, while some authors assert that it was imposed by husbands in order to keep their wives from gadding." According to Dr. Lockhart, one account ascribes the custom to an empress named Tan-ke, B.C. 1100, who, having club feet, prevailed upon the emperor to order that hers should be adopted as the model of beauty, and that children's feet should conform to the imperial pattern. According to the same author, another account states that the custom commenced under the Emperor Yang-te, of the Suy dynasty, who, in A.D. 695, ordered his concubine, Pwau, to bandage her feet, placing in the sole of her shoe the stamp of a lotus flower, so that at each step she took she left the impression of this sacred emblem; hence the name given to compressed feet of lotus flower, and golden lily.

From the date here given, a connection would seem to exist between the origin of this custom and the introduction into China of Buddhism; the water-lily being held sacred among the followers of that religion. It may also have some connection with a custom which prevails in Ceylon at the present day. For instance, a pair of sandals, the property of the late King of Candy, which I lately had an opportunity of examining, were so formed that by means of a spring concealed in the support by means of which, as it passed between the great toe and the adjoining one, the figure of the water-lily flower was made to expand, as it were, upon the foot, each time a step was taken by this zealous Buddhist; a corresponding idea may therefore have in China led to the prevailing custom of the golden lily there.

One other account of the origin of compressing the feet must suffice: according to Dr. Parker, the custom was commenced by Li Yuh, a licentious prince of Keang Nan, whose court was at Nanking. He ruled from A.D. 961 to 971, and in a freak determined to *improve* the feet of a favourite concubine by

making them resemble the *new moon;* and from this the practice gradually spread.

I have had opportunities of examining the contracted foot of a China-woman, and can vouch for its being a most unpleasant object to look at. That much disease arises both directly and indirectly from the custom is a point upon which I entertain no doubt. In delicate children, the requisite degree of pressure upon the foot, to produce the fashionable deformity, frequently induces disease of the soft bones which form the ankle and instep; and the inability to take exercise in the open air, caused by the practice, is a fertile source of much of the scrofula and diseased constitutions which afflict a large proportion of the natives of China.

Rich and poor alike adopt this custom in the northern parts of the empire, where it is far more general than it is in the south. The extreme inconvenience of it is almost universally acknowledged, but yet, unless an imperial edict be published abolishing the custom, the force of fashion is so powerful that all hesitate to be the first to appear singular. Hopes have been expressed that with the commencement of a new reign the custom may be abolished, and there are many who look for this when the boy emperor becomes a little older than he is at present. It is almost needless to mention that the practice is not adopted by the Tartars; it is peculiar to the Chinese.

Another peculiar and apparently meaningless custom prevalent in China is that of the men wearing long queues, or tails; we may, indeed, wonder what was the cause of a similar custom among our own fathers and grandfathers, for men of middle age must perfectly remember the time when the pigtail worn by men was as much an institution in Britain as crinoline is now by the fair daughters of that sea-girt isle. The ancient Chinese, we learn, wore their hair long; they bound it upon the top of their heads, and taking pride in its glossy, black colour, boastfully called themselves the black-haired race. In 1627, however, the Manchoos were in possession of the province of Liatung only. They then issued an order that all Chinese should adopt their coiffeur on penalty of death, as a sign of allegiance. The fashion which thus began by compulsion is now followed from choice.

The date assigned to the invention of printing in China is the tenth century, that is, five hundred years before the discovery of this art in England. It is customary to bestow great praise and admiration upon the "celestials" for this and some other discoveries, to the honour of which they are undoubtedly entitled; we find in reality, however, that what printing then was in China so it has remained; the characters to be conveyed to paper were carved upon wood in the form of blocks; they are so still, and therefore it would amount to absurdity to compare this as an art with the state to which printing has now attained in this country.

Nothing can better show the uncertainty in which the introduction of the art into China is obscured, than the very different dates assigned to the one under notice. Thus it is by another author stated, that the natives of this country probably caught the first idea of the art of printing from the impression of their seals, an art said to be known to them nine centuries before the Christian era. Here, then, we have a difference between the periods given of not less than eighteen centuries.

"Paper is an article of which the Chinese claim the invention; the first having been made from the bark of a tree (*Morus papyrifera*), and old linen, by *Tsai-lun*, who flourished about a century and a half before Christ." ('Persia,' vol. ii, p. 299.) The best kind of paper seems to have been manufactured in the Corea; and it is said that here also was the preparation first made which is now known as Indian ink. It was not brought to perfection till the ninth century, and is prepared from soot deposited by the smoke of pines or oil, formed into a paste by a strong solution of isinglass, with a little musk, to correct the smell. Isinglass prepared from asses' skin and the soot of lamps, makes the best "ink."

The eleventh and twelfth centuries are particularly famous in the history of China as connected with arts and sciences. Among other arts that owe their origin to this period is the manufacture of porcelain ware, now and for a long time known by the name of the country in which it took its rise. "In the department of Jan Chan, in Fan-liang-hien, east of the Poyang Lake, are the celebrated porcelain manufactures of King-teh-chin, named after an emperor of the Tung dynasty, in whose

reign, A.D. 1004, they were established. This mart still supplies all the fine porcelain used in the country, and the small amount of fancy-ware now exported to Europe and America. Upwards of a million persons are said to be employed in this branch of manufacture."

What has been stated in regard to printing is applicable to two other arts, which are believed to have been discovered in China about A.D. 1112, namely, the manufacture of gunpowder and the use of the mariner's compass. Both these are still in use in China, but, as has been well remarked by a recent writer, the one discovery has led to no result there beyond the explosion of crackers; the other, merely to the miserable junks we are accustomed to see on the coast; whereas the adoption of the one by western nations has been the means of carrying their arts, sciences, and civilization to almost all corners of the world; by the latter, commerce has united all nations in bonds of mutual self-interest.

But these are not the only discoveries in China belonging to this period; we find that in the twelfth century two other discoveries took place there that are not usually attributed to that country; namely, the invention of playing-cards in A.D. 1120, and the circulation of bank-notes by the Mongols in 1154.

As regards the state of the science of medicine in China, comparatively little seems to be known with certainty. Dr. Pereira states that the medical code of that country was the production of Hoang-ti, B.C. 2000; according to the same author, all books on medicine in China prior to B.C. 1105 treated of medicine without giving prescriptions, but at this time Chang-ka described this portion of the art. Such as medical science now is in China, we may safely infer that it is practised at the present day much as it was at these early times, for in no country, not excepting India, have ancient customs continued to be more rigidly observed than they have in China.

There are in circulation numbers of native Chinese works, not only upon medicine, but upon all branches of natural science. Much good is also being effected by the publication by missionaries of European works of this nature, translated into the native language, some of these having the additional

recommendation of being profusely illustrated. There are several native treatises upon epidemics to be met with at book-stalls; but, so far as I can ascertain, the accounts contained in them are very meagre indeed.

Regarding the epidemics that have prevailed in that country in later times, plague is said to have existed in the southern part of the empire in the sixteenth century, but has not been observed more recently—a circumstance which is the more to be wondered at when we take into account the very filthy nature of all Chinese cities, whether situated in the south or the north of the empire.

Cholera has proved to be a great scourge in the country. It raged in Ningpo in May, 1820, and continued to do so till 1823, carrying off in that city and province not fewer than ten thousand persons. At Hang Chow it raged in 1821 and following year, and in 1842 prevailed at Amoy and Chang Chan-fu. It has not occurred at Canton in an epidemic form, but deaths by sporadic attacks are by no means rare there; so also in the north, although it does not appear ever to have occurred as an epidemic, several natives and foreigners lost their lives from this cause in 1861; and we were informed that, in like manner, there had during past years been an occasional death from it.

Smallpox is a terrible scourge in China, the practice of inoculation, which is in general use, tending to propagate the malady among the people. Many die, and of those who recover large numbers bear upon their faces deep and horrible scars, the result of this loathsome disease; numbers more are partially or completely blind, in consequence of its ravages upon the eyes. In 1820 Dr. Pearson introduced the practice of vaccination into the south. At the time these notes were taken, however, this measure was but very little adopted there, and in the north not at all. Inoculation is performed either by introducing the virus of smallpox into a deep cut made into the arm, or by the still more filthy method of inserting into the nostril a pellet of cloth impregnated with the matter of the disease.

The origin of all diseases is, by the masses, referred to what they call the Yin and the Yau, these, according to the doctrine

of the Taoists, as we shall see more particularly hereafter, the male and female principles of nature. "Fung," or wind, has also, according to their ideas, a powerful influence in inducing certain maladies, and the origin of others is attributed to "the dragon."

A brief notice must here suffice of their treatment of some diseases; for instance, in cases of fever, the Chinese endeavour, by manipulation, to drive, bully, or frighten the affection from the system; they invoke the aid of the god of medicine; if these measures are successful, good and well, if they are not, they prepare the patient for entering the unseen world. With this view they bedeck the dying person in his or her finest robes, place in the hand a piece of "paper" money, and having done so, the assembled friends patiently watch in the sick chamber until dissolution takes place.

Here we find so great a similarity to the custom followed under similar circumstances by the natives of the Guinea coast of Africa, that I am tempted to make one remark in reference to the latter. There, as in China, when incantations and other means in common use have failed to check the approach of death, and dissolution appears to be imminent, the dying man is dressed in his finest clothes, his friends assemble around him, and priests endeavour to make smooth the way for him to another world. There is this difference, however, between the customs of the two countries, that whereas the dying Chinaman is laid out comfortably upon his bed, the unfortunate Guineaman is not allowed to die in a reclining posture; he is propped up in a standing or sitting posture, and with the din of drums and war-horns sounding in his ear, quits the scene of his earthly labours.

In regard to the manner of disposal of the dead, and of the veneration shown to ancestors, we find that a greater similarity exists to what is found in Western countries than might at first sight be supposed. This would naturally lead us to the consideration of ancestral worship, and the honours paid to the remains of the deceased. These have, however, been so fully described in systematic works upon China, that a few brief remarks upon the subject are all that is required in this place. Unlike the custom generally adopted in the present day through-

out the world, of removing the dead as speedily as circumstances will permit, the Chinese, like some of the nations of antiquity, retain their dead as long as possible, and long after the bodies have mouldered to decay, retain as mementoes the tablets, before which, at stated intervals, they prostrate themselves and present offerings.

It is seldom that the coffin which contains the body of a deceased relative is removed from the vicinity of the family house under a year from the time of death, and, in a great many instances, these ghastly objects are not removed at all, but permitted to accumulate at the very door until a great part of a generation are thus collected. When, at last, the coffin is removed for interment, tables, upon which offerings for the dead are placed, form a conspicuous part of the procession; a melancholy dirge is played, and wailers precede the corpse, much after the manner which is described in Scripture, and is at the present day practised by Mahomedans, Italians, and certain classes of the Irish. At intervals the procession is stopped for a short time, and the nearest relation or descendant of the deceased prostrates himself before the effigy which precedes the coffin. At the grave, if that be excavated as with us, certain ceremonies are said to be performed which remind us of what is observed in Western Africa; but in the North of China, graves are for the most part not dug; the coffin is placed upon the ground, and afterwards carefully covered over with a casing of mason-work, or less costly material, according to the degree of wealth of the family. The burial-grounds are carefully tended; once a year they are repaired and properly cleaned, and at least this often the living worship at the tombs of the deceased. When decomposition has literally restored dust to dust, the bones are carefully collected, placed in a jar or urn, and preserved in or near the dwelling houses of the descendants.

This practice of sacrificing to the dead existed among the ancient Egyptians, by whom it was considered as constituting the tie between children and their parents, especially between sons and fathers. According to Bunsen ('Egypt,' vol. ii, pp. 467—472), a tablet at Karnak represents Tuthmosis in the act of performing this ceremony, and a similar representation is found at Gurnah. Let it further be remarked, that the

"sacrifices" most frequently offered to the dead in China, consist of cooked provisions, all of which are usually discussed by the worshippers; and we may see the affinity of the custom to that alluded to in Psalm cvi, 28—"They joined themselves together at Baal-peor, and *ate* the sacrifices of the dead." As regards urns, these have been in use in different countries in all ages, for among some of the most ancient remains discovered at Korsabad, M. Pitta found, at the south-east extremity of that mound, a number of jars of terra cotta, placed upright in niches, and containing fragments of bones ('Assyria,' p. 527), while it need only be remarked that among the ancient Etruscans it was considered a personal misfortune to be subjected to have the dead bodies of one's relatives taken from the house. In Egypt, Peru, and other countries, bodies were carefully embalmed and thus preserved, a process which would appear to be much used in America at the present time. And in some parts of Africa the dead continue to be buried under the floors of the houses in which they had lived.

We may safely assume that a trade was carried on between China, Assyria, and Egypt, from a very early period in the history of these countries. This is shown to have been the case, in one respect at least, by the circumstance that the ladies of ancient Babylon wore dresses made of silk, as mentioned by Job. And upon the same belief we are able to explain the otherwise unaccountable circumstance that there have been discovered in the tombs at Thebes, small bottles precisely similar to those which we know are of Chinese manufacture. We may presume that at this early period the intercourse between these countries was by land; indeed, we have reason to believe that among the great lines of thoroughfares that converged towards ancient Nineveh, was one by which traffic was conveyed from the far east by way of Persia. It further appears that regular communication with the Chinese was carried on by the Roman merchants, and it is added:—"Caravans from Thinæ (supposed to be Tsinan in Shantung) came regularly by way of Bactria to Barygoza," which is supposed to be Broach, in Goozerat, and that this communication still exists. ('Modern Travel—India,' vol. i, p. 148.)

Another route would seem to have extended from Patna, by

Hurdwar to Aspacara, in Thibet, and at a later period Buddhism was probably introduced into China partly by it.

We, moreover, find that in process of time the communication, which at first had been of a peaceful nature, underwent an unfavorable change, armies being led by the roads along which merchants had for generations brought their wares from China; thus, in the history of Arabia, we learn that Hareth ul Rayesh, the twenty-first monarch of that country in descent from Hamyar (the founder of the dynasty named after the latter monarch is believed to have been contemporary with Moses). Of this dynasty, which is said to have lasted two thousand years, one monarch, namely, Abu Kurrub Tobbaa, is said to have combated with the Tartars; and he, for the first time, for an Arab prince, heard of China. He afterwards, about B.C. 465, led an army to Thibet and China, through Bokhara ('Modern Travel,' p. 25). We become aware, from many sources, that about the commencement of the Christian era constant commercial intercourse was carried on between this country, India, and even Ceylon. We know that for a long time maritime trade with India was monopolised by Egypt, and thus the extension eastward of the emblems and beliefs of that country by this means is easily accounted for.

Compared to the dates just given, the communication between this country and China is of to-day. We learn from an examination of this intercourse, that misunderstandings, and bloodshed, hold a position in these annals, fully as prominent as do the records of the mercantile transactions. If we recount a few of the chief incidents connected with our intercourse with that country, we learn that in 1596 an unsuccessful attempt was made by Queen Elizabeth to open commerce with it, by despatching a letter addressed to the emperor. In 1605 Sir E. Michelbourne, who had a patent for trading to the eastern seas, not only seized the ships of any nation with which he met, but he also plundered several valuable Chinese junks. In 1637 an English vessel commanded by Captain Weddel, reached the Bocca Tigris, and being fired upon there by the Chinese, he demolished the forts guarding the passage of the river, landed a hundred men, and planted the English flag on the spot. Trade at Canton was for a short time opened after this. It was

soon stopped again, however, in consequence of the war against the English and Portuguese at Macao, so that it was not before 1684 that our countrymen obtained an actual footing at Canton.

For a century afterwards no material misunderstanding would appear to have occurred between the foreigners and the natives. In 1784, however, the English ship, the "Lady Hughes," lay at anchor off Whampoa, and while firing a royal salute, accidentally caused the death of a native. The Chinese demanded the person who had fired the fatal shot, and strange as it may now appear, the unfortunate fellow was surrendered to them. Shortly afterwards he was strangled by order of the emperor, and no further steps in regard to the matter appear to have been taken by the British.

In 1794 the mission of Lord Macartney proceeded to Pekin, but although a gracious reception was accorded to the English ambassador, the objects of the expedition were not attained. In 1807 the East India Company's Ship "Neptune" being off Canton, a quarrel arose between some of her crew, who were on shore, and the Chinese. The officers of the vessel speedily quelled the riot, in so far as their own men were concerned, securing them for the time being in the factories there. The Chinese, however, continuing to throw stones during the day, not only at these buildings, but at all Europeans who happened to pass, the sailors after a time became exasperated, and rushing from the factories upon the mob, killed one of their assailants before their officers were able for the second time to enforce something like order. The Chinese demanded that the so-called murderer should be given up. Twelve sailors seem to have been engaged in the riot, and an inquiry failed to discover the actual perpetrator; yet, in order that the Cantonese might be quieted, one of the number was actually given up to them. Fortunately for him the emperor dealt more leniently with him than he had done to the unfortunate sailor of the "Lady Hughes." He permitted him to redeem himself.

To understand the next occasion of collision with the Chinese, it is necessary to observe that the Portuguese occupying Macao had pledged themselves to the imperial government not to admit the troops of any nation to that island without the consent of the native authorities. In 1808, the Portuguese expected an

attack by the French. At this time Admiral Drury landed a British marine force upon the plea of assisting them in the event of such an attack being made, although it would appear that this step was taken by him more in opposition to than in accordance with the wishes of the Portuguese governor. The hoppo or chief officer of customs at Canton protested against the measure. The admiral explained, the viceroy remonstrated, the local authorities threatened, the naval commander insisted. Both sides prepared for war, and having done so, the British troops were re-embarked, and the vessel sailed away for India.

In 1816, the embassy of Lord Amherst returned unsuccessful from Pekin. The emperor had insisted upon the performance of the nine prostrations, or "Kow tow," to which his lordship very properly gave a most indignant refusal of compliance; nothing further arose out of this than that he and his party left the capital in a kind of disgrace by the "son of heaven," as the emperor calls himself, and is called by his people; and after a tedious, but interesting journey along the imperial canal, arrived at Canton.

In 1822 the ship of war "Topaze" lay off the island of Lintin, in the estuary of the Canton river: a boat had been despatched from the vessel to the island for the purpose of obtaining fresh water, and to enable the sailors to wash their clothes. While on shore these men were attacked by an armed body of Chinese, by whom fourteen of their number were more or less severely injured. The ship opened fire, and two of the native assailants were killed. In the representations which arose out of this incident, the Chinese could not be made to understand that the "Topaze," not being a trader, was not under the jurisdiction of the committee of supercargoes, through whom, according to their notions, all communications from vessels, either to the "Hong" merchants or to native officials, ought to pass. Nor could they understand that the officer commanding a British ship of war could have a distinct and separate authority confided to him by his own government. When, therefore, a proposal was made by the mandarins that the injured sailors should be sent on shore in order that they might be examined by a native tribunal, and a refusal was given to this request, a summary stop was by them put to further

trade. A further representation being made by the Chinese to the committee of merchants, the latter declared that they had no control over ships of war, and suggested that an officer should be sent on board to communicate with Captain Richardson who was in command of her. The Chinese persisted that they would receive no communication direct from Captain Richardson. The committee repeated that they had no authority over king's ships, and to make matters worse, it would appear that this officer declined to receive on board the persons who were at last delegated by the Chinese to investigate the affair. The committee, at this stage, threatened to quit the country; the Chinese informed them that they were perfectly welcome to do so. The knot was now cut, however, by the "Topaze" taking her departure, and the viceroy was informed that the "murderers," that is, those who actually discharged the shots against the assailants of our men, would be tried in England; whether they were or not does not appear, but trade with the Chinese, which had been interdicted, was reopened.

In 1831, the charter of the East India Company having terminated, the functions of the select committee at Canton ceased. Lord Napier was shortly afterwards sent out as chief superintendent of trade, and arrived there in 1834. The Chinese at once assumed towards him their usual tone of arrogance. Lu, the governor general of Canton, refused to receive from his lordship letters or communications unless superscribed "Pin," *i. e.*, petition. To this Lord Napier very naturally objected, and the immediate consequence was suppression of the trade. Two men-of-war proceeded up the river as far as Whampoa, exchanging fire with the Bogue forts while passing; and, on coming to anchor, despatched a boat's crew of men to Canton for the protection of the factories. His lordship's health almost immediately gave way, and it became necessary that he should leave Canton; accordingly, on the 21st of September, he proceeded towards Macao in a native boat which had been provided by the native authorities for his conveyance. In it he was detained five days, and so harshly treated by the Chinese that he died a fortnight after arriving at the Portuguese settlement. Trade was then resumed.

During 1837 and 1838 the Chinese authorities became more and

more determined to suppress the importation into that country of opium. A brig, the "Fairy," having on board a quantity of this drug, was detained at Fuchan in the former of these years; and in order to obtain her release it was necessary to send Her Majesty's Ship "Raleigh" from India. In 1838 the Canton authorities treated the letters of Captain Eliot as they had done those of Lord Napier. An English brig, while passing the Bogue forts, was fired upon by them; and the governor of Canton, by way of intimidating the foreign merchants, sent an officer and fifteen men to execute in front of the factories a convicted native dealer in opium. The foreigners rushed out and forced the party to remove from the place; a crowd speedily collecting, the foreigners were chased into the factories, and for three hours these buildings were pelted with stones and brick-bats by the mob, until at the end of that time the district magistrate having made his appearance, they were dispersed. Captain Eliot, with some seven boats, arrived the same evening from Whampoa, and, in accordance with his orders, all opium vessels quitted the river during the three following days.

The following year, namely, in 1839, is that in which commenced what has been called the Opium war. On the 26th of February in that year, Fung-a-Ngan, was, by order of the authorities, strangled in front of the foreign factories. As a consequence, the English, American, Dutch, and French flags were hauled down, and stoppage of trade threatened. On the 18th of March, Lin arrived at Canton with special orders from the emperor, and this commissioner inaugurated his career by ordering that all the opium then in possession of the merchants, should, within three days, be given up by them under penalty of two of their number being immediately selected for execution. Captain Eliot once more proceeded to Canton, but was unable to prevent the order of Lin from being enforced; under the instructions and authority of the British officer, therefore, opium to the value of nine millions of dollars, and filling 20,283 boxes, was given up. Nor was this sufficient to satisfy Lin, he published a second edict, rendering the import of opium a capital offence, and within a few days afterwards, Captain Eliot, together with all British and Americans, left Canton.

War was by this country declared against China in 1840. It

is not deemed necessary to follow the military operations which, two years later, obtained a treaty, in which it was laid down that British, who had hitherto been prohibited from entering Canton, should be admitted within the walls of that city; a stipulation which was for several years evaded by the Chinese, and not enforced by England. On the restoration of peace the Bogue forts, which had been destroyed, were put into a state of repair by the Chinese; and so early as 1843, so intense had again become the ill-feeling of that people towards Europeans, that at Canton the latter were personally attacked by them whenever a favorable opportunity occurred; and not only were merchants who had returned refused admittance into the city, but they would not be granted additional ground whereon to erect their business establishments, or "hongs." Moreover, Europeans in all official communications with the Chinese, were by the latter studiously treated with want of respect.

This state of affairs continuing to 1847, Sir John Davis, governor of Hong Kong, proceeded to Canton to quell the hostility of the people. He captured all the guns upon the now famous Bogue forts, and for the time being compelled the Chinese to observe the terms of their treaty.

The old feeling, however, gradually manifested itself; matters slowly but steadily drifted back to what they had already been, when in 1856 the affair of the "Arrow," at Canton, brought them once more to a crisis. In 1857 a portion of the expedition which had been dispatched from England for the purpose of bringing to reason and justice the execrable "Yeh," was diverted to India, in consequence of the terrible events then occurring in that country; and the recollection is yet fresh of the diabolical attempt made, it is universally believed at his instigation, to destroy at one swoop the foreign population of Hong Kong, by mixing arsenic in the bread baked for their use. In 1858 Canton was taken by a military and naval force, which in numbers was insignificant. Yeh was captured, and sent to Calcutta; and the same year a treaty of peace was signed at Tien-tsin.

When, in 1859, our vessels reached Taku, having on board an ambassador whose duty it was to obtain the ratification of that treaty, he was, upon one pretence or another, opposed in

his desire to proceed inland by the regular navigable channel, namely, the River Peiho. He was repeatedly requested to proceed by the Peh-tang river, which, as was afterwards ascertained, communicated with the former by means of only a narrow canal, joining it at some distance above the city at which the treaty had been signed.

Then came the unsuccessful attempt to force the passage of the river at Taku, leading, as it did, to the expedition which in 1860 resulted in the temporary occupation of Pekin by the armies of England and France, and the concession of the various points that had hitherto been in dispute.

Already do we find hostilities once more in China. Now, however, it is not against the ruling power of that empire that our troops are engaged; we now endeavour to support a government which has invariably treated us with that degree of indignity of which I have given a few examples, and which, we have reason to know, is very generally held in detestation by the vast population who have what they deem the misfortune to be subject to it.

CHAPTER II.

HONG KONG.

The island as seen from the anchorage—Completeness of the expedition to the north—First impressions—The Chinese population—A patriarchal dinner party—Floating houses—Their female occupants—Early rising not practised, and why?—Troops at Hong Kong—Available accommodation—The Sanitarium at the Peak—Rapid rise of Hong Kong—A cause of sickness—Despatching invalids—Necessity for steam transport—French arrangements—A suggestion—Weather in August—Indications of storm—Rain and water supply—General climate—Medical history of Hong Kong and Southern China.

Hong Kong is one of an extensive group of islands in the estuary of the Canton or Pearl River, to which the name of Ladrone or Pirates' Island was given by the Portuguese, from the circumstance that numerous hordes of freebooters formerly and even still lie concealed among them, ready to attack the weak and unprepared.

As, on the 21st June, 1860, we approached the high, rocky, and inhospitable member of the group, which constituted England's only possession in China, a road, apparently cut from the face of the solid rock, was the first indication we observed of the island being inhabited by British, for where will they not make roads, if it is in the power of man, by excavating rocks, by filling ravines, or by bridging gorges and valleys to do so?

Turning round by Green Island, first one or two houses built in the European style appeared, then their number, size, and architectural pretensions increased. The roadstead, dotted with numbers of vessels of all sizes, and surrounded, as it were, upon all sides by mountain ridges as if it were a highland lake opened fully to our view. And now we are abreast of the principal part of Hong Kong; the engines slackened, the anchor

dropped, and the P. and O. Company had completed their contract; we had been safely conveyed to our destination.

Stretching along the beach, the quays and merchants' houses of business were thickly crowded together, and what gave to the latter a somewhat strange appearance was the numerous flags of different nations that waved from flagstaffs placed at short intervals, each indicating the official residence of the consul for the particular nation or country whose colours were thus somewhat ostentatiously displayed.

It was not difficult, among the numerous piles of buildings that rose before us, to distinguish some of those intended for public purposes; for instance, the barracks, half concealed by bamboos and wild fig trees, were easily identified from their proximity to what was evidently the parade ground; the church proclaimed its own character, and the union jack hoisted in the neighbourhood of what appeared to be the largest and handsomest building of all that lay before us, indicated sufficiently that the place in question was Government house.

The eye naturally followed this new scene to the summit of the island; a sharp, conical point, to which the name of Victoria Peak has been given. It is said to be 1700 feet high, a flagstaff has lately been erected upon it, and a signal station established for telegraphing to the merchants and officials in the town below the approach of ships.

The expedition had started for the north of China before we arrived; the crowds of shipping that had filled the harbour as it had never been filled before, was now almost entirely gone; only a few ships laden with commissariat stores, or with horses that had arrived from Bombay, were now left. Ships of this description, all legibly marked and numbered upon their bows and quarters, continued from time to time to arrive, to be taken up and fitted out on the spot, but their arrival and departure were scarcely noticed except by those whose particular province brought them in the way of learning their movements as a matter of duty.

All were loud in praises of the completeness of the expedition that had just started. On all sides we heard praise bestowed upon the various officers who were charged with fitting out its various departments, and while all were ready to admit the ex-

perimental nature which the expedition must necessarily assume, inasmuch as it was then in progress to act in a country regarding which there was very little positive information available; all admitted the fact that, in the completeness of its various parts, it was the most likely to fulfil its objects of any expedition that had ever been fitted out by England. That much, if not all of this, was attributable to the enquiries that followed the Crimean war was generally admitted. One of the many good results that have followed upon these, is the greater discretion allowed to officers who are charged with the management of particular departments; in breaking through "red tape," that is, in enabling them, when circumstances demand, to dispense with the restraints and routine which had crept into office—grown and matured during the forty years of peace that preceded the campaign against Russia.

First impressions of a place are very frequently correct; they are always more vivid and distinct than those that are subsequently made. In many instances they may be corrected on further knowledge of the locality, but generally speaking they will be found to be very nearly correct. Mine, as regards the climate and some other particulars connected with Hong Kong, were noted by me at the time, and therefore I have but to transcribe the passages of my journal in which they are recorded to these pages.

The period of the year in which I arrived at this colony was about the hottest. Towards the latter end of June, heavy torrents of rain fell at intervals. Between them the sun, unobstructed by a single cloud, poured down an oppressive, sickening heat, that rendered exposure to its rays or even exercise in the shade extremely disagreeable.

The absolute range of the thermometer was very considerably below what it is in India during the corresponding season, yet the sensations of a person at Hong Kong are in many respects similar to those felt on the plains of Bengal during the calm oppressive weather which there occurs in the month of September, when the rains have ceased, but the atmosphere yet remains so loaded with vapour as to render evaporation from the surface impossible.

At Hong Kong the prevailing monsoon is completely shut

out by the very nature of the island, which rising high and precipitous to windward of the town of Victoria, completely blocks out the south-west monsoon from it; only admitting such irregular gusts as may find their way down the narrow gorges by which the island is in many places intersected.

The houses of the residents are large and spacious, many of them fitted up with a degree of elegance that is not often seen at home. In those built upon the face of the hill the temperature is sufficiently moderate to render the use of punkahs unnecessary. Not so, however, in those situated in the town. In them the heat and sensation of oppression occasioned by a still damp atmosphere, are very great, yet except in the dining-rooms punkahs are never used; people may indeed toss about in bed sleepless and uncomfortable, yet because *nobody* uses punkahs in their bedroom, they will not try to introduce them. Another reason, I believe, is, that they look upon these contrivances as indications of Indian luxuries, and that insisting as they do in following English habits, although residing in a most un-English climate, they refuse to use them.

The activity, the apparent energy, the appearance of competency, if not affluence, presented by the Chinese population of Hong Kong, cannot do otherwise than make a favorable impression upon the visitor, who has only been accustomed to see the eastern Asiatic as represented by the sleek, black-skinned, sneaking, apathetic native of India. Compared to the native inhabitant of the maritime regions of Hindostan, we at once see that the native of the south of China is quite a superior kind of animal.

In many respects the labouring classes at Hong Kong contrast favorably with the corresponding classes in Britain. In personal cleanliness they are certainly superior to the "great unwashed" of our towns, and even of the agricultural districts. In quiet industry they beat the Englishman hollow. In propriety of demeanor, and in sobriety of habits, the contrast between the Chinaman and our own sailors and soldiers may be seen at Hong Kong at almost any hour of the day, and until a late hour at night; nor do I believe that any native of the United Kingdom can look upon the contrast thus presented without

blushing for and feeling ashamed of the miserable picture presented by his own countrymen.

We may reasonably conclude that one powerful cause of the active and energetic character of the southern Chinaman as compared to the cold-blooded Hindoo, who inhabits a corresponding latitude, is to be found in the meat-eating propensities of the former, and the vegetarian diet of the latter. If, as is said, but a very small amount of animal food is required by the inhabitants of countries situated within the torrid zone, John Chinaman is guilty of a degree of extravagance, which, considering his very frugal habits generally, would not be attributed to him. It so happens, however, that the particular description of animal food, as also the manner of cooking it adopted at Hong Kong, render what are, no doubt, very savoury dishes in themselves, most repulsive to look at.

Pork, fat and coarse, roasted in large untidy masses, or often without being cut up at all, is a very favorite dainty. Ducks and geese are also evidently held in high esteem, probably from the extraordinary tendency they have here to take on a huge layer of yellow oily fat, which completely turns the appetite of any person but a Chinaman against them, but which it is to be presumed renders them doubly palatable to and enjoyable by him.

It is pleasant to see, even here, a few traces of the good old patriarchal system which formerly bound together families and their dependents. Seated comfortably on chairs or forms round a table, the male members of the entire establishment may be seen daily, about four o'clock, enjoying what it is to be presumed is their dinner, each nimbly securing by means of those most extraordinary of contrivances, chopsticks, the small portions into which some one or other of the above delicacies had been divided, or it may be morsels of fish or vegetables, for they are fond of variety in their bill of fare; or shovelling into their mouths, from a small bowl held under the chin, heaps of rice that would make a Hindoo stare!

Shamshu, or native spirits, seem on these occasions to be sometimes drunk, but the general dinner drink is tea. The meal is soon over; the merry laugh in which from time to time all at table join, shows the perfect equality upon which all for

the time being feel themselves to be. Yet no long time is thus wasted in the luxury of the table; both it and all traces of the repast are soon cleared away, and then the different members of the establishment return to their official situations. If it happen to belong to a blacksmith, the hammer is soon heard again, and the bright sparks flash from the anvil as if there had been no interruption; if a shoemaker's workshop, figures that but a few minutes before were gesticulating and laughing away right merrily, stoop over the last, and "stitch, stitch," it may be from then till midnight; and so it is with all handicrafts or trades, each individual pursues his particular part, hour after hour, and day after day, for they know not yet the blessing of the Sabbath's rest; and thus they go on until sickness or accident breaks in upon their daily routine.

Many of the coolies and labourers who work on shore during the day, retire during the night to small frail things of boats, the upper parts of which are chiefly made of split bamboos, interlaced like so much matting—crank, and so top-heavy that they are liable to upset if suddenly caught in one of the gusts that sometimes, without a moment's warning, sweep down a mountain gully and across the harbour, including a surface of water not more than twenty or thirty yards in breadth.

Immense numbers of these boats ply about the harbour during the day, some engaged in fishing, some in conveying chance passengers to or from vessels in the road, others variously engaged, but few indeed permitted to remain idle. These are entirely worked by women, the wives and daughters no doubt of some of the men whose patient industry on shore during the day has been the subject of our admiration. Seldom, indeed, do we see a male on board one of them; when we do, his old decrepit look shows plainly that his own part in the toil and bustle of life has been played out—that he is now dependent upon the care of his children, or it may be of his grandchildren.

Among the female crew of the boats may be seen the representatives of two, and very often of three generations, the elders employed in some of the lighter kinds of work on board, as, for instance, cooking; those of adult age steering the barque by means of a huge powerful "scull," which gives a command over it that can never be obtained by means of the small tiny

things used at home for the same purpose. It often happens that the woman who thus labours hard, and pushes her way in a most wonderful manner among the crowds of similar boats that surround a newly arrived steamer, carries upon her back an infant, the small thing strapped on by means of a square piece of cloth upon which some ornament is worked in thread, and from the corners of which straps extend, so as to be readily secured over the shoulder and round the waist of the woman. The child's head is allowed to project at the upper part of this sling, and thus the infant sleeps, while its head falls from side to side, or backwards, according to the attitude of the mother at the time, so long as she is engaged in her ordinary avocations. How it escapes collision against the sides of the roof of the boat, or against the crowds of other boats and women, each of whom looks only after her own individual interest, is a marvel. The mother seems to have forgotten that she is encumbered with such a treasure, and often leaps from boat to boat, and carries with her heavy packages in a manner that speaks much for the bodily strength and agility of the sex in southern China. Meantime, other small pledges of affection, scarcely bigger than the one upon the mother's back, are crawling, and sprawling, and screaming upon the sort of half deck with which these boats are furnished. Yet no accident befals them. You would think that they must of necessity tumble heels over head into the water; yet such accidents are, I am told, extremely rare, and the majority grow up to manhood or womanhood with active frames and strong constitutions, to follow the same occupations that their fathers and mothers did, and so on, back through so many generations that their origin as a distinct class is lost in antiquity.

A very few days' residence at Hong Kong convinced me that early rising is not practised here. In this respect the habits of the residents resemble that of the few white men who vegetate for a few years on the Coast of Guinea in western Africa, and probably from the operation of similar causes, to wit, the well-known fact that the morning air, before the sun has dispelled the noxious vapours that hang about, is extremely unhealthy, producing fevers in those who expose themselves to them.

Among many other important facts of late years brought to

light during the investigations that have taken place into the probable causes of yellow fever, is one which appears to be applicable to Hong Kong, and whose operation forces the residents, without they themselves being aware of it, to accommodate their habits accordingly.

It has been ascertained that a temperature of 80° Fahr. destroys the power for evil of that morbific influence to which the name of malaria has been given, and hence the explanation of what at first sight appears paradoxical, that exposure to the heat of a tropical sun in a "malarious" and unhealthy district, is far less dangerous than exposure to the heavy mist and emanations that from sunset till sunrise envelope these places as with a cloud.

There is therefore good reason why the residents of Hong Kong do not, during the hot season, get out of bed, and away scampering on horseback in the early morning, as is the custom in India. Unhealthy as I fear the island is at all times of the day, it is to be suspected that it is most so of all during the hours the sun is below the horizon.

Although, however, for the very sufficient reason just given, the residents do not ride or drive out in the morning, except during the short "cold" season, they usually spend a couple of hours before breakfast in the large, spacious verandahs, with which their houses are in part surrounded. Tea, coffee, and cheroots are served, for, be it observed, ladies do not make their appearance; the newspapers of the preceding mail are now read, for during office hours each is occupied by his own particular business; in the afternoon comes the drive, then dinner, and thus time is passed until the hour arrives when all retire for the night.

In regard to the troops at Hong Kong, now that the expedition to the north had sailed, the force retained was not much larger than what on ordinary occasions were maintained there. The infirm, the sick, and the incapable, among both British and Asiatics had been detained on the departure of the various regiments for the north; these were united into a provisional battalion, which, for the time being, formed a substitute for a regular regiment in Victoria: the latter were sent to a place called Stanley, situated on the south side of the

island, and at a distance of about nine miles from the town above named. These, a few artillery and engineers, and a regiment of Madras native infantry, constituted the entire force on the island.

In addition to these two places, a small number of troops, British as well as native, occupied temporary huts that had been erected for the purpose on the peninsula of Kowloon, directly opposite Hong Kong. Since then, this valuable point of land has been ceded to our government, and will, it is to be hoped, be retained for naval and military purposes. It is directly exposed to the force of the monsoon, and will, there is every reason to believe, be advantageous as a station in a sanitary point of view.

A large amount of hospital accommodation has been provided, and was held available to meet any influx of sick or wounded that might occur from the expeditionary force; fortunately this was not required, for, as is well known, the objects of the expedition were gained at a very small cost of life and blood. Our general hospital was capable of containing nearly three hundred patients, space had been provided at Stanley for eighty; more than the latter number could be accommodated in a range of barracks at Siwan, on the eastern side of the island; about the same number could be taken into some wooden huts erected for this purpose on Kowloon; a small building intended as a sanitarium, erected at Victoria Peak, was capable of containing twenty-five men, and upwards of one hundred and eighty sick could easily have been accommodated with comfort on board two naval ships in harbour that were given over for hospital purposes.

Although the sanitarium at the peak is so little removed from the town below that an active person can easily traverse the distance on foot in forty minutes, yet there is a very material difference in the temperature there as compared to that of the town, the thermometer at the peak standing 8° Fahr. lower than at the same period of the day in the town. There is, moreover, at the peak, a constant breeze during the prevalence of the south-west monsoon, and although, as we may have reason to remark hereafter, doubts may reasonably be entertained as to whether exposure to the force of this monsoon is

not destructive, rather than beneficial to health, one fact is certain, that exposure to it is at all events agreeable to the sensations.

There is one obvious inconvenience to which invalids who may hereafter occupy this sanitarium must be subjected. This arises from the masses of cloud with which the island peak is more or less constantly enveloped during the rainy months, and the extreme dampness of the atmosphere which at the same time prevails.

We know full well that some of the invalid stations in the Himalayas are, during several months of the year, subject to similar inconveniences; that at Simla—the most fashionable of these mountain resorts for officers on the Bengal side of India—clouds and fogs frequently envelope it during many hours a day, yet we know that evil results do not accrue, but on the contrary many a person, brought to the verge of the grave by continued residence in the plains, speedily finds his health improved if not completely restored by residence at that station, although the atmosphere there is so loaded with vapour that the annual fall of rain amounts to above three hundred inches, the annual fall at Hong Kong being under eighty inches.

The building in question was not taken into occupation, but, had necessity arisen, arrangements could have been completed in a temporary kind of way in a very few days, so that we reckoned upon it as available should an influx of sick or wounded from the north suddenly take place.

It will be interesting to observe what degree of success shall attend this establishment: its objects are excellent; it was one of the projects intended for the benefit of the soldier for which we are indebted to the late lamented Lord Herbert; it is at present no more than in an experimental condition, but if successful, let us hope that its dimensions may, without unnecessary delay, be much enlarged.

As regards the rapidity with which the island of Hong Kong has acquired its present degree of importance, its progress has not been exceeded by any of the towns that have of late sprung up even in the gold-yielding countries, Australia or California.

I have on several occasions spoken to men who were on the

China coast for a considerable time prior to the occurrence of the "opium war," and who remember the island of Hong Kong when the only buildings visible upon it were a few wretched huts of fishermen. To them, the change worked in its aspect in the twenty years that have since elapsed is so wonderful that they would fail to realise its extent did they not actually see it.

Then, along the present site of Victoria, the island's only town, bare precipitous rocks, deep ledges, offshoots of the mountain, extended to the water's edge. There appeared then but little prospect of its being possible, however great might be the science, the energy, and the capital brought to bear upon it, to erect upon its rugged sides more than a very few houses at the utmost; yet now, what between blasting and excavating the rock, removing as it were bodily a hummock from one place to deposit it in a hollow somewhere else; a range of wharfs—an extent of street formed in the European portion of it by magnificent mansions, and a succession of terraces rising one above the other along the mountain face, have been brought into existence, and that, too, with a rapidity and to an extent which can be found in few other places, if indeed anywhere. The island of Hong Kong, which in 1841 was deemed by the sapient celestials so utterly barren and useless as to be of no service whatever to them, was accordingly ceded to the "barbarians," by whom, now in 1860, its northern face is covered with a beautiful, a busy, and a wealthy town; and its harbour with shipping.

It is said, however, that during the early years of our occupation of the island, one great cause of the fearful amount of sickness which then prevailed not only among the soldiers, but also, although in a less degree among the other foreign residents, was the circumstance of the extensive excavations and removal of soil then taking place for the purpose of forming sites for houses. These operations necessarily exposed a large amount of soil, then for the first time uncovered, and wherever this was the case, great sickness and mortality occurred in the neighbourhood, depending, no doubt, upon the terrestrial emanations that had been set free. This cause was not for some time suspected, but attention was naturally drawn to it by its

fearful effects. It is now a recognised fact in Hong Hong that newly turned up soil is most unhealthy; hence, residents neither go into new-built houses, nor, when they do occupy a building, do they sleep upon the ground floor.

The despatch of invalid troops from Hong Kong is speedily found to be one of the principal and most important parts of the duty of a chief medical officer, and to this subject my attention was directed very soon after my arrival on the island.

During the prevalence of the south-west monsoon, that is, from April till October, the weather to which ships proceeding towards the Cape or England from Hong Kong are exposed, is as unfavorable for sick men as it possibly can be; it is characterised by a succession of damp, hot, oppressive days, while calms or squalls alternate with one another; thus forming a combination of circumstances as unfavorable as possibly can be conceived for men suffering from bowel diseases, from liver diseases, or from the ordinary effects of severe fevers. In order to give men affected in either of these ways a fair chance of recovery, it is essential that they should be exposed as little as possible to such influences as these, while crowded together, as they must necessarily be, on board ship; and this of itself forms sufficient reason why, if invalids are henceforward to be sent direct from China to the Cape of Good Hope or England, shall be invariably conveyed in steamers.

Not only is it desirable that soldiers when prostrated by severe sickness in the more unhealthy parts of China, should know that government has provided for them the means of being quickly removed into a more genial climate, but it is sometimes a matter of life and death to the unhappy subject of climaterial disease whether he have the prospect of being within a few days, removed from the place in which he languishes, with the delightful feeling of home before him, or whether he must lie and suffer for weeks or months until sufficient numbers of his comrades fall into a state similar to his own, and it then becomes a matter of necessity to engage transports for the removal from the station of these wrecks of their former selves.

Often and often I have had occasion at Hong Kong to

observe the different effects upon men under such circumstances as I have alluded to, the different effects of the hope, or utter despair, as they learnt that they had the prospect of immediate removal, or were told that no ship was available.

Tell one of them that in a very few days more he will be shipped for England, and watch how the sunken eye glistens with pleasure, and the pale haggard countenance becomes lighted up with a flush and a smile. Visit the same person the following morning, and observe the change that has taken place in him; he looks and expresses himself as feeling a new man; hope has taken the place of despair; he is buoyed up by the prospect of once again seeing familiar fields, mountains, streams, and of clasping by the hand friends of bygone years; many and many a soldier is thus enabled to bear up against, and finally recover from, an illness that would, had such prospects been denied, have inevitably swept him away.

Such, then, is but a faint view of the effects of hope upon the soldier; that it is a correct one, those who have had opportunities of forming an opinion will, I am certain, admit.

Our French allies are said to have in operation during the present expedition a regular system of transport to Suez, by which the sick of their army and navy can be readily sent thither. At Alexandria, they are said to have a receiving-ship, where these men obtain what attention their individual cases require, and from which they are sent on to their native France. We might, I think, adopt an arrangement similar to this, and considering the large armies we must always maintain in both India and China—but especially the former—it is, I think, absolutely essential that some better means should be devised for disposing of invalids from these than the system at present in use affords.

Why, for instance, should not one, or even two large steam-vessels, specially fitted up for hospital purposes, as the "Mauritius," or "Melbourne," be employed for the conveyance, at stated intervals, of sick and weakly men from the China station to Suez; thence, like the French, to a receiving-ship in the harbour of Alexandria, where their requirements could be attended to, and whence, by a regularly established line of vessels of the same description, they should be conveyed in the

first instance to Nettley, or some other of our larger hospitals in England.

In like manner, other vessels of the same description might be employed in the conveyance of invalids from Kurrachee, Bombay, Madras, and Calcutta; or a rendezvous might easily be established at Ceylon, where men from these various places might be collected and cared for, while a steamer was being got in readiness to convey them up the Red Sea. In a sanitary point of view there is no doubt that the adoption of measures such as these would prove to be an immense boon to the soldier, and, even on the score of expense, that sad bugbear which always stares us in the face, I question much if it would cost more money than does the present plan of sending over men by trading vessels.

Although I have incidentally extended to India the plan which I propose, of giving to invalids the benefit of a change of climate, my remarks are made chiefly with a reference to China, for we must bear in mind the fact that while there are in India various establishments situated in the most healthy localities it was possible to select, to which invalids may be readily sent, there are in China no places of the kind.

Some of the Japan islands are, both on account of their climate and their geographical position, well adapted for a sanatarium; Kivu Siou is so in a remarkable degree, and has the additional advantage of an excellent harbour at Nagasaki; it is therefore to be hoped that much time will not be lost before advantage is taken of our position there, and an establishment for invalid soldiers and sailors from the adjoining coast of China erected there. As, however, I shall have occasion hereafter to refer more particularly to this point, I will say no more in regard to it here.

The wet and sickly season had now arrived; the month of August was nearly a week old; the sensations indicated a hot, and what is well understood as a muggy state of the atmosphere; the nights were more oppressive than the days; to walk even after sundown was most unpleasant; the slightest bodily exertion caused an amount of perspiration sufficient to prevent most people from attempting exercise. These intervals of heat were frequently broken by the occurrence of severe

storms of wind or rain, or both: while they lasted, and for a short time afterwards, the air felt slightly cool and fresh, but this respite did not last long, nor was it attended by that benefit as regards health which similar changes are attended by generally in the tropics. On the contrary, as the comparatively cool breeze comes suddenly rushing down one of the gorges of the island mountain, and strikes in upon us through the open window, fortunate, indeed, may we consider ourselves to be, if a few hours afterwards we do not feel an attack of shivering, followed by fever, or by neuralgia; the baneful effects of what might for the moment have been a grateful breeze.

This apprehension, however, is not sufficient to deter people from freely exposing themselves to the direct current of the wind, except when, as is sometimes the case, it rushes over the island with all the force of the typhoon; bursting in doors and windows of houses, tearing off roofs, and scattering the shore with wrecks of boats and ships. These hurricanes are fortunately of rare occurrence, and, it is said, betokened by indications that are well understood, and never neglected by the residents on the island.

The smaller storms that may now and then interrupt the excessive heat and closeness of the climate are also preceded by unmistakable indications, sometimes for a day or two, sometimes during only a few hours. No sooner do the clouds and the sky begin to assume the well-known threatening aspect, than the hundreds and hundreds of boats to which allusion has already been made, as avoiding the harbour, are turned head on towards some particular nook or corner on the shore, where, as their owners have learnt by tradition and experience, they may be secure from danger. Often, when to the inexperienced in local meteorology, the aspect of the firmament shows no change, the long line of these boats, all being rowed in one direction, warn us that their "fair" owners read its characters better than we, and as they scull their tiny vessels, each trying to get before the other, and most lustily maintaining the credit usually conceded to the sex for garrulity. The strange procession they form reminds one of the flight of crows towards a place of shelter, when their keen instinct tells them that a storm is

brewing; a sight familiar to all who have lived in the country parts of "home."

Throughout the long and trying rainy season at Hong Kong, the island presents a succession of recurrent waterfalls. In clefts of rocks, down steep precipices, and through deep narrow gorges scooped out by the wear and tear of, it may be, millions of rainy seasons, streams of water white with foam suddenly appear during a heavy fall of rain, and sparkle in the sunlight for some time after, becoming, however, smaller and smaller until they cease altogether, or again acquire their first dimensions by a recurrence of the rain-storms upon which their existence depends.

I note in my journal that, on the 14th of September, a favorable change took place in the weather at Hong Kong; however, that up to that date we had excessively close, moist weather, the atmosphere peculiarly heavy and enervating, the temperature within doors about 88° Fahr., but the sensations indicating a much higher range. The effects of this state of the atmosphere upon the health were evident; people suffered from lassitude, and illness increased among the residents in the town. On the 14th, however, clouds rapidly sprang up in the north-west, a slight storm of wind and rain set in, this was succeeded by a grateful change in the temperature of both day and night, and, in fact, the north-west monsoon may then be said to have set in.

A person who only saw Hong Kong during the period of the year when the island is festooned as it were with waterfalls, as has just been described, could scarcely believe that during several months there is actually a dearth of that element which now prevails in somewhat too great abundance. Yet so it is. So very precipitous is the island that water does not accumulate upon it, except in some places where artificial reservoirs have been formed; no sooner does rain fall upon the greater part of the island, than it is precipitated over ledges and precipices, as we have been endeavouring to describe. There are some natural springs at different parts along the ridge of the mountain summit, but they are inconsiderable in size, and a greater number discharge themselves down the southern face of the hill, or away from the town of Victoria than towards it.

The result is that during the months of December, January, and February, water becomes an exceedingly scarce commodity at Hong Kong; there being, it is said, often scarcely enough to meet the ordinary requirements of the island, without taking into consideration the necessities of the large quantity of shipping with which the harbour is continually crowded. The subject of continuous water supply thus becomes of great importance to the residents on the island, and accordingly a scheme is now in execution, under the direction of the governor, with a view to the formation of aqueducts and reservoirs at different points; thus there is every prospect that the want, now so grievously felt, will soon cease.

The climate of Hong Kong cannot be described as a very hot one. Its peculiarities are its excessive moisture throughout a great portion of the year. These two circumstances have no doubt a great influence upon the origin of the diseases that prevail upon the island, due regard being also had to those that are beyond all doubt resident in the substance of the island itself. A table of meteorological observations taken during the first nine months of 1861, having politely been given to me by Lieutenant Courtenay, of the Royal Engineers, is given as follows. By it we perceive that the actual fall of rain there shown had indeed been small. The climate is said to have been in all respects very favorable during this year, and to the moderate temperature, and general moderate nature of the season, is, no doubt, attributable, the very great degree of health, as compared with other years, that the soldiers enjoyed.

It is matter of regret that a regular series of meteorological observations, taken at Hong Kong, are not available to the scientific public; such a record, if taken in connection with the prevalence of particular diseases, would be of great value; unfortunately I have it in my power to add but little in this respect, yet the following table may be interesting. It exhibits the range of the thermometer during eleven months of 1858-9, and the monthly admissions into hospital out of a strength of 750 men. (Extracted from a report by Dr. D. F. Rennie, 31st Regiment.)

Month.	Admissions of a strength of 750 men.	Thermometer.		
		Max.	Min.	Mean.
November, 1858 . .	140	74	66	70
December, „ . .	214	70	63	66
January, 1859 . .	121	64	55	59
February, „ . .	89	62	51	55
March, „ . .	68	65	56	60
April, „ . .	65	76	67	71
May, „ . .	113	84	77	80
June, „ . .	137	87	81	84
July, „ . .	201	86	79	82
August, „ . .	220	86	80	83
September, „ . .	135	83	79	81
Total . .	1556	—	—	—

Of the above 1556 cases, 818 were of fever, and 160 of diarrhœa and dysentery. The deaths, in all, amounted to 34 from all causes.

When on my way home from China, I obtained from Lieutenant Courtenay, of the Royal Engineers, a register of meteorological states during ten months of 1861. This year was a remarkably cool and healthy one, and although the observations of any one year cannot of themselves be considered to represent truly the climate of any particular place, I deem the following table sufficiently interesting to give it here.

Meteorological Table for 1861,

Showing the range of the Barometer and Thermometer, Humidity, Direction of the Wind, Rain-fall, &c., compiled from the Royal Engineer Department, Hong Kong.

Month.	Barometer.			Thermometer.			Humidity, 0-1.			Wind.	Rain.		Cloud, 0-10.	Remarks.
	Max.	Med.	Min.	Max.	Med.	Min.	Max.	Med.	Min.		No. of days.	Inches.		
													Average.	
January .	30·302	30·068	29·608	73½	62	49	·949	·838	·706	N. E.	5	2·500	7	Fine, though cloudy, for the time of year.
February .	30·439	30·095	29·821	71	57½	47	·946	·815	·709	N. E.	7	2·165	6	Fine, light showers.
March . .	30·217	30·020	29·828	76	62⅓	55½	·953	·814	·632	N. N.E. E. S.E.	4	·415	6½	Very fine month.
April . .	30·094	29·903	29·675	83	70½	62	·953	·799	·552	N.W. N.E. E. S.E.	10	6·400	6½	Fine, generally.
May . .	29·987	29·803	29·609	87	76¾	63	·973	·828	·676	E. E.S.E. S.E.	14	15·472	6½	Very heavy rains; 6·620 inches fell in 24 hours on the 8th.
June . .	29·930	29·768	29·576	88½	82	74	·945	·778	·622	W. E. S.E. S.S.E.	16	13·100	6	Heavy rains.
July . .	29·911	29·738	29·521	88½	81½	75	·945	·846	·609	W. E. S.E. S.S.E.	18	14·279	7⅓	Heavy rains.
August .	29·830	29·665	29·317	92½	84	75	·894	·742	·623	W. E. S.E. S.S.E. S.	10	5·160	5½	Very fine during first part of month, and showery during remainder.
September	30·014	29·749	29·277	88½	81¼	75	·898	·733	·591	N.W. N.E. E. S.E.	13	10·277	5⅓	Heavy showers.
											Total	69·768		

Barometer corrected to 32° Fahr., and sea level.

Hong Kong has obtained for itself a character for unhealthiness only second in degree to our settlements on the West Coast of Africa. That this was in the earlier years of its connection with England fully deserved, there are, alas, too many proofs; but if this is the case, there are also proofs that a vast improvement has taken place in this respect of late years; an improvement which we may safely assume to have been brought about by a combination of circumstances, rather than any one in particular. Of these, the more important are the establishment of comparatively good barracks for the soldiers; the greater care of late years bestowed upon the hygiene of the troops; and also, no doubt, the local causes of disease have been diminished by the works necessary to transform the face of a barren island into the beautiful and busy town that Victoria now is.

It will be remembered that the island of Hong Kong was ceded to the British crown in January, 1841; on the 21st of August following, Sir Hugh Gough proceeded with the expeditionary force, leaving General Burril to command the troops left behind. These troops were for the most part accommodated on board the "Mirza" and other ships, a few European details being located on shore, at Cowloon, and on the island itself. Of the sickness among the troops thus left behind, no record appears to exist prior to the month of August, but thenceforward, throughout the year, the ratio of sickness and death among them were as follow, namely:

	Strength.	Sick.	Died.	Ratio of deaths per 100 strength per annum.
August.				
Europeans . .	765	178	3	4·68
Natives . . .	714	251	15	25·20
September.				
Europeans . .	752	160	12	19·08
Natives . . .	710	162	8	13·44
October.				
Europeans . .	671	83	1	1·68
Natives . . .	571	142	4	8·60

	Strength.	Sick.	Died.	Ratio of deaths per 100 strength per annum.
November.				
Europeans . .	1339	95	0	0·00
Natives . . .	615	156	6	11·64
December.				
Europeans . .	1241	140	3	2·88
Natives . . .	592	206	11	22·20

In the month of August of this year, so great was the ratio of sickness among the 37th Madras Native Infantry, which occupied temporary barracks on shore (386 being sick out of 631), that a committee was ordered to investigate the cause of the great unhealthiness. The majority suffered from fevers, but the prevailing character of the disease is said to have been debility. No satisfactory cause was discovered of the great sickness.

The natives were afterwards moved across to Cowloon, where they occupied an old brick fort, from which a detachment of 18th Royal Irish had to be removed in consequence of their almost universal sickness there. Here the sepoys rapidly recovered, but then, it is noted that the latter had very little duty there. In about a month afterwards they were moved back to Victoria, where they had to perform heavy duties, and then their sick list ran up as before.

At this time the troops had no other barracks than mat sheds, or thin wooden huts—the floors of which were, it is true, raised somewhat from the ground—yet to this bad accommodation much of the sickness was attributed.

Another fertile source of sickness is said to have been heavy drill, caused by the anxiety of commanding officers to fit their men for field service. The mortality was at the same time great among the troops on board the transport ships in the harbour, but in their case the circumstance is believed to have been accounted for by their crowded condition.

We have more particular records of what was the rate of sickness and mortality among the troops in 1842, and this information is concisely given in the following table, namely :

1842.

January.

	Strength.	Sick.	Deaths.	Ratio of deaths per 100 strength per annum.
British . . .	684	59	6	10·44
Native . . .	665	164	20	36·80

February.

British . . .	683	74	0	00·00
Native . . .	430	72	5	13·92

March.

British . . .	680	93	3	5·28
Native . . .	37	9	1	32·00

April.

British . . .	674	111	8	14·16
Native . . .	36	8	0	00·00

May.

Europeans . .	668	148	8	14·28
Natives . . .	510	27	0	00·00

June.

Europeans . .	620	128	2	3·84
Natives . . .	582	55	0	0·00

July.

Europeans . .	616	290	45	87·60
Natives . . .	665	62	9	16·08

August.

Europeans . .	568	186	48	101·40
Natives . . .	645	90	20	37·20

September.

Europeans . .	576	168	16	33·36
Natives . . .	721	304	16	26·52

	Strength.	Sick.	Deaths.	Ratio of deaths per 100 strength per annum.
October.				
Europeans . .	462	207	10	25·92
Natives . . .	551	74	23	50·04
November.				
Europeans . . } No information.				
Natives . . . }				
December.				
Europeans . .	974	279	19	23·28
Natives . . .	554	96	3	6·48

The report from which the above information is taken states that the mortality for the year was, among Europeans, 21 per cent., among the natives of India 15 per cent.

The cause of this mortality is thus given in the report of a court of inquiry on the subject.

The men, it appears, were located in inferior barracks, situated at West Point (said to be the most healthy part of the island). The accommodation was so inadequate that the men's cots were placed with a space of not more than three inches between each, all along the side walls, and with a double row, touching one another, down the centre of each of the buildings. The sickness broke out in July (from its heat and dampness necessarily unhealthy), and on the medical officers becoming sick from severe duty, the men had scarcely any attendance, many dying under this neglect.

We learn that while native troops remained on board ship, they continued healthy; sickness, however, broke out among them so soon as they took the shore duties. Their chief diseases were remittent and intermittent fevers, and although the attack itself was said to have been usually less severe than it was in Europeans, the natives generally subsequently died from diarrhœa and debility.

An attempt was made at this time to charge the unhealthiness of the troops to excesses committed by them, and to exposure to the sun. A court of inquiry, however, established

the facts that during the prevalence of the sickness the conduct of the troops had been especially correct, and that they had not exposed themselves to the extent stated. The same court also gave it as their opinion that the high rate of mortality at Hong Kong during 1841 and 1842, stamped the country as a second Sierra Leone.

During this year a detachment had been stationed at *Chuc Choo* (Stanley), at the south side of the island, which is stated to have been decidedly more healthy than Victoria. No wonder, indeed, that our newly acquired colony received the character for sickness, which still clings to it, although in some measure undeservedly. Bad as had been the state of matters during the first two years of occupation, the mortality in 1843 far exceeded what had as yet occurred. We are informed that the European part of the troops, during a part of this year, occupied barracks at West Point, but these buildings became so unhealthy during the month of July that all the men had to be embarked. Others of them were at Stanley; the native Indians occupying "lines" that had been built for them.

The following table gives the rate of sickness and mortality during this year, namely,—

1843.

	Strength.	Sick.	Deaths.	Ratio of deaths per 100 strength per annum.
January.				
Europeans . .	1054	224	29	31·80
Natives . . .	548	72	6	13·08
February.				
Europeans . .	1032	166	20	23·16
Natives . . .	543	65	5	11·24
March.				
Europeans . .	1015	159	9	11·76
Natives . . .	538	60	3	6·60
April.				
Europeans . .	1005	162	3	3·36
Natives . . .	533	54	3	6·72

	Strength.	Sick.	Deaths.	Ratio of deaths per 100 strength per annum.
May.				
Europeans . .	1005	246	11	14·28
Natives . . .	527	43	2	4·44
June.				
Europeans . .	955	223	27	33·84
Natives . . .	504	46	3	7·08
July.				
Europeans . .	925	231	38	49·50
Natives . . .	498	55	4	9·60
August.				
Europeans . .	869	265	41	56·64
Natives . . .	612	186	4	7·68
September.				
Europeans . .	822	307	45	65·64
Natives . . .	623	202	4	7·68
October.				
Europeans . .	860	262	59	82·32
Natives . . .	606	124	19	37·56
November.				
Europeans . .	805	231	51	75·84
Natives . . .	595	124	8	16·08
December.				
Europeans . .	854	215	35	49·08
Natives . . .	573	91	4	8·28

The death rate during some of the above months is appalling, as, for instance, that in October. From documents now available, we learn that throughout the year the average strength of Europeans was 937, the total deaths 368, or upwards of 39 per cent. The rates of death being different in the two

British regiments stationed here; thus the 55th lost 46 per cent. of its strength, the 98th only 22.

We find that during the same period the average strength of native troops was 558, the deaths 64, or more than 11 per cent.

For the first time we obtain some information as to the rate of mortality among officers. We learn that in the present year their strength amounted to 71, and that of this number 7 died during the year, giving a death rate of 10 per cent. It would seem that there is always a desire among writers upon unhealthy stations to apologise, as it were, for the deaths that occur in the locality; thus, in the present instance, we find it stated that of the seven officers who died, three died at West Point, and a fourth was employed in surveying the island.

An inquiry took place into the probable causes which led to so high a rate of mortality during this year, beginning as it did in January, during the coldest and what might naturally have been expected to have been the healthiest period of the year.

It was ascertained that the 98th Regiment, in which, up to a certain point, the rate of mortality seems to have been highest, had left England on the 11th of December, 1841, in the "Belleisle," and from that time until November, 1842, it had been, with few intervals, continuously on board that vessel, engaged in the operations then in progress along the coast of China. During this time, out of a strength of 770, it lost by death 253 men. The great outbreak of mortality, arising it was said, at Ching Keang Foo on the 21st of July; and it deserves especial notice, that the causes which were then believed to have produced this sad state of matters continued in operation during the following year (1843) at Hong Kong, when it appears the men had little duty to perform, but *revived* with increased violence in 1844, when, we are informed, the duties became heavy. Some of the causes of the sickness are thus recorded:

1. Crowded state of the ship "Belleisle," as also the heat and confined atmosphere of the orlop deck.

2. The length of time (214 days) the regiment (98th) remained on board.

3. Long continuance of salt rations.

This vessel was 1700 tons burthen, and the number of all persons on board, including other detachments and the ship's company, amounted to 1278 persons, in addition to which, the decks were said to have been much encumbered with provisions and baggage. The officers, who had sufficient space and superior food on board, remained healthy; no deaths took place among them.

During the latter part of May, and in June and July, of this year, a severe outbreak of remittent and continued fever occurred in a detachment of the 55th Regiment at West Point. And it is remarked that the appearance of the men out of hospital is far from favorable; they are pale, emaciated, and weak; relapses are excessively frequent among them, convalescence tedious, and recovery imperfect.

In seeking for a cause, the committee noted two deep ravines in the vicinity of the barracks, these containing more or less decaying vegetable matter, as also having several cultivated terraces on their sides. They candidly admit, however, that these seemed insufficient to account for the sickness, but add, at the same time, no other source of malaria was apparent.

The barracks in which the men were, are described as of very faulty construction, and very much shut in from the south-east breezes; and a more probable cause than either appears as stated in the fact of the men having a long march in a hot sun, when mounting and returning from guard at Victoria, as well as from being on duty every third night. They further state their belief, however, that some other cause is at work which cannot be detected.

During the year 1844 we learn from records that, "the left wing of the 55th Regiment being now reduced to a state of the most deplorable inefficiency," it was resolved to send the corps back to England. It accordingly embarked for home in March, and a native Madras regiment (4th) arriving to relieve the 41st Native Infantry that had been there, that corps returned to India in May.

The 4th Native Infantry, which came on from Singapore, had, during the previous year, suffered severely there from sickness; they were accordingly no acquisition at Hong Kong, where their advent did not relieve the 98th from the heavy duty they had

to perform. It followed that during the most sickly period of the year, the men of the 98th who were fit for duty, had seldom three nights in bed, and the sepoys scarcely two.

Up till now, both barracks and hospital occupied by the troops would appear to have been only temporary buildings, of what precise nature does not appear; but it may be inferred that they were made of matting. In the present year the sites of the present Murray Barracks and General Hospital were given over to the military authorities, and these buildings commenced upon them.

The following summary represents the rate of sickness and mortality among the troops during the present year:

1844.

	Strength.	Sick.	Deaths.	Ratio of deaths per 100 strength per annum.
January.				
Europeans . .	1122	186	17	18·12
Natives . . .	527	35	6	13·56
February.				
Europeans . .	1736	151	14	11·44
Natives . . .	522	69	3	6·84
March.				
Europeans . .	1342	98	2	1·68
Natives . . .	509	10	4	9·36
April.				
Europeans . .	1043	96	8	9·36
Natives . . .	704	16	0	0·00
May.				
Europeans . .	1035	115	12	13·80
Natives . . .	637	58	5	9·36
June.				
Europeans . .	1007	234	23	27·36
Natives . . .	630	31	11	20·88

	Strength.	Sick.	Deaths.	Ratio of deaths per 100 strength per annum.
July.				
Europeans . .	938	139	26	33·24
Natives . . .	672	43	21	37·44
August.				
Europeans . .	866	219	21	28·92
Natives . . .	708	110	30	50·64
September.				
Europeans . .	839	144	16	22·56
Natives . . .	660	110	24	43·56
October.				
Europeans . .	826	177	23	33·36
Natives . . .	651	60	34	62·64
November.				
Europeans . .	848	150	31	43·80
Natives . . .	643	51	13	24·24
December.				
Europeans . .	1088	113	18	19·80
Natives . . .	461	29	3	7·80

The records inform us that the average strength of European troops during this year had been 1057; total deaths 211, that is, nearly 20 per cent. of the whole. The average strength of native Indians was 610; the deaths among them 154, or about 25 per cent., so that they suffered greater loss than did even the British.

We also obtain some information as to the rate of mortality among the officers during the present year. The strength of British was 74, of which number 7 deaths took place, being in the ratio of about 9½ per cent. They had to live in bad houses, and were by the nature of their duties much exposed to the sun; and these circumstances are noted as accounting for the higher rate of mortality among them than among the civilians of the colony in the same period. We

moreover hear that sixteen officers had to leave the colony on sick certificate during the year; some appear to have contracted their illness in other portions of China, and this circumstance is, in the official reports, paraded with a degree of triumph, as indicating that they were not all prostrated by disease in Hong Kong.

Throughout the preceding reports, much stress is laid upon insufficient accommodation as a cause of disease among the troops. In the remarks from which we now quote, this is again and again brought forward. A table is thus given representing the "strength" of the Europeans, connected with the various firms here, and the rate of mortality among them during the present year, from which we learn that of 95 persons of this class, the deaths only amounted to 2, that is, 2·10 per cent. A general rate at the foot of the return from which we quote deserves notice—it states that one of these two fatal cases took place "from hard living."

In the present year the site of what are now called the "Murray" barracks was selected, not because it was the most eligible in the island, but because it was the only spot upon which a range of buildings of the description required could be erected.

An inquiry being instituted as to the rate of admissions to strength of the troops occupying upper and lower floors in the barracks at Victoria, a table is given showing this for the month of August, 1844. From it we learn that of 155 British soldiers occupying the upper floor, 38, or 24·51 per cent., were admitted into hospital in this one month; and of 185 who occupied the lower floor, 86, or 46·66 per cent., were admitted during the same period—that is, nearly double the proportion of that from the upper.

It is, moreover, interesting to learn what were the particular diseases that occasioned this material difference in the rate of admissions. That there was a marked increase in all, is evident from the table; but what most strikes us is the fact, that whereas among the men on the upper floor the admissions from fever were 16, or 10·32 per cent., and 15 of diarrhœa, or 9·67 per cent., the cases of the first-named disease from among the men on the ground-floor were 51, or 27·02 per cent.,

and from diarrhœa, 21, or 11·35 per cent. No cases of dysentery are recorded among the admissions.

Nothing could so plainly show as do these brief statistics, the danger of keeping soldiers upon the lower story in Hong Kong. The only circumstance which occasions surprise is, that bowel complaints, under such circumstances, are not more prevalent than they are.

At this time it would seem that the greater number of residences of civilians were bungalows, built after the Indian style. Experience soon indicated, that however convenient they might be in that country, they were not so for Hong Kong; they were accordingly given up, and so rapidly have all traces of their existence been obliterated, that a gentleman who had known the colony since 1841 informed me in October, 1860, that in more than one spot where he has known bungalows to have stood, and their proprietor to have died in them, no trace whatever now remains either of the building or of the ornamental grounds by which it had been surrounded.

With hardly an exception, the dwelling-houses of Europeans now consist of at least two storeys; the ground-floor being used for stores or offices; all the apartments intended for continuous occupation being on the upper.

The records in the principal medical officer's office give for this year a report of a detachment of 129 men of the 18th Regiment, stationed at Stanley from April till August. From it we learn that during the first thirty-two days of the residence of the detachment there, a ratio of 28 per cent. of strength had been under treatment on account of intermittent fever alone. The detachment was, during the hot season, strengthened from time to time by fresh arrivals, but the same high rate of sickness continued among them; and from a table we learn that the ratio of fever cases to strength, at particular ages was—of those under nineteen years of age, 8 per cent.; twenty to twenty-four, 3 per cent.; twenty-five to twenty-nine, 2 per cent.

It is further shown that had the whole detachment above referred to been equally unhealthy, every man in it would have been three times in hospital, and have had two attacks of fever in seven months, the time they were stationed there.

The report, moreover, goes on to say that the men who were long at Stanley could be detected in the ranks by their remarkably pale, sallow appearance; and the same remark may hold good now, in 1860.

So reduced was the detachment at Stanley in November, 1845, by sickness, and so alarming the mortality, as was stated by Dr. Kerins, in consequence of the already debilitated state of the men, that he recommended that a large detachment should be sent to sea for a month, and to be relieved by men from Victoria.

In the course of a report on the state of health of the troops in the command for the year from 1st April, 1844, to 31st March, 1845, we learn that the whole strength of British troops (exclusive of officers) was 1867; of which number the admissions into hospital were 5887, and the deaths in hospital 241; that is, at the rate of 128 per 1000. This mortality was principally occasioned by fevers and bowel-complaint, but after these, and excluding surgical diseases, it is said that the parts most liable to disease were in the order of susceptibility—lungs, eyes, brain, and liver. It is worthy of remark, however, that diseases of the stomach and bowels were oftener more fatal than fevers, in the proportion of 120 to 105, but that the rate of amount of fever cases among the troops was higher than that of diseases of the stomach and bowels, in the ratio of 462 to 222 per 1000 of mean strength.

We learn from the same report that remittent fever in Hong Kong assumed a very malignant type, often ran its course rapidly, the patient in such cases being delirious or comatose, no doubt from inflammatory action within the cranium.

In the intermittent fever, quinine is said to have caused only temporary cessation of the paroxysms; but the malarious influence remaining, the attacks recurred once or twice a month, until the men's strength became worn out. The patients then died exhausted, or from bowel affection.

The cases of liver disease admitted were few in number; thus, 28 attributable to this head were all that were admitted in the total number given above of 5887. It appears, however, that cases of fatal bowel disease were in several instances complicated with hepatitis; but even then, this class of diseases

would seem to be far less prevalent in Hong Kong than in India, and so they were observed to be on the coast of Guinea.

It would be an unprofitable task, and also a gloomy one, to detail the amount of sickness and death by which our troops were much more than decimated during the early period of our occupation of Hong Kong. These have considerably moderated of late; yet it is to be feared the unenviable notoriety must still be accorded to the island that particular years are still characterised by more than ordinarily severe outbreaks of disease and mortality. Much is, indeed, being done to remove, as far as circumstances will permit, all apparent causes of disease; much success has attended the measures already taken, and hopeful anticipations are entertained in regard to the good effects to health from the establishment of barracks on the promontory of Cowloon; I must express my personal fears, however, that Hong Kong will never become other than a very unhealthy station.

These remarks are sufficient to show us what Hong Kong once was. Let us see what it has been as regards salubrity more lately, in as far as this can be deduced from medical statistics of a military force.

The table which follows has been compiled from the statistics of sickness and mortality among all the troops in southern China during the official year of 1860-61. It includes the portions of the force stationed at Canton, as well as at different parts of Hong Kong; so that the statistics are thus made to embrace soldiers well located in barracks as well as those in huts, and those occupying some of the native buildings at Canton, in a manner similar to what the force at Tein-tsin did there.

It may be assumed that the average strength of the men whose statistics are thus given was—of British, 3280; of natives, 3150. Thus, the annual rate of mortality may be taken as 3·68 per cent. among the former, and 2·34 among the latter. The year is reported to have been a remarkably healthy one, and certainly the rates of mortality contrast favorably with what occurs at not one only, but many of our stations in India.

From the table now given we gather that the degree of healthiness of particular months of the year in this part of

China is in the following order: the most salubrious heading the list, and the degree diminishing as we descend, namely:

	Deaths.
February	2
March and April equal, in each	5
November	9
December	12
January	14
May	16
September	18
October	22
June	23
August	24
July	45

The period of residence in the command was so similar in all, that no conclusion could be drawn from this circumstance. It may, indeed, be mentioned, that the troops, British and Asiatic, were all less than two years in the command; a system of frequent reliefs having, it is believed, been just begun.

It may be worth while, from the meagre data at my disposal, if I note in succession the order in which mortality is occasioned by those diseases that have occurred other than in a solitary, or what may therefore be looked upon as an accidental case. I note them accordingly among British and natives respectively, placing the most fatal at the top of the list in regard to each class, and so on downwards, namely:

British.	Deaths.	Indians.	Deaths.
Fevers	55	Fevers	25
Bowel affections	38	Bowel affections	22
Phthisis	6	Bronchitis	4
Apoplexy	6	Debilitas	4
Hepatitis	3	Pneumonia	3
		Rheumatism?	3
		Phthisis	2
		Morbus Cordis	2
		Phagedæna	2

It thus becomes evident that during the year under notice natives of India are liable to be destroyed by a larger number

of diseases than the British, and that the order of liability to death of these two classes does not coincide with each other.

Taking these diseases in the above order, as they attack the British, we find in the south of China fevers of all the ordinarily described types; namely, continued, intermittent, and remittent. It is beyond doubt, however, that in all these certain peculiarities are observable, which owe their rise to local causes; thus, although as regards continued fevers many of the attacks are precisely similar to, and amenable to means that are successful in the disease elsewhere, this is not the type that is here deemed of most importance. Cases are often admitted, in which the patient may be described as labouring under febrile cachexia. His surface is hot and dry, he is weak, does not complain of local pain, nor does there seem to be present any local determination. There are no accessions in the severity of his symptoms, neither, on the other hand, are there remissions; a peculiar paleness pervades his surface, lips, and gums; the colouring matter of the blood decreases in amount; he has no desire for food; sometimes diarrhœa, at others irritability of the stomach to a great degree; and thus he goes on from day to day, progressing from bad to worse, until, if nothing be done for him, he dies.

Intermittent fever, as that disease affects the troops here, has its peculiarities also. Its attacks are most erratic, and very frequently having no regular period of recurrence. It differs from the corresponding disease met with in India, inasmuch as enlargement of the spleen, as a complication, is here comparatively rare, while there, in protracted cases, it is the rule. Another peculiarity of the disease is the remarkable obstinacy with which it resists treatment; in fact, the manner in which "China ague" clings to its subjects, even after they have left the country, is too well known by many of them.*

* The following extract from the works of Sir Ronald Martin, K.C.B., is so apposite to the present diseases, that I cannot resist transcribing it. He says—

"It is not so much from the high rate of temperature we Europeans suffer, as from the excessive humidity that is conjoined to it for so many months in the year, and both which, commingled with the terrestrial emanations, tend gradually through their united influence by inducing what may be termed a *cachexia liver*, to undermine the best aud most robust of constitutions."

The above paragraph was penned by its author with especial reference to India; it is equally applicable to other hot climates, and particularly so to the west coast

Remittent fever, as observed by me, was of a less virulent type at Hong Kong than at Canton. At the former place the attacks of this form of disease were low and asthenic in their nature; but at the latter, where the men of the 87th Regiment were their subjects, they were of such a degree of intensity, that if the patients were not swept away at once by them, convalescence was imperfect, requiring a removal home, and in many instances, with more or less destruction of the cerebral functions. As in India, remittent fever seemed often so closely allied to *coup-de-soleil,* that it was difficult to draw the distinction between them; but there was this difference, that the amount of destruction afterwards left in the cerebral functions, was greater here than in that country.

Dysentery and Diarrhœa. — These two diseases manifest certain local peculiarities. The former would seem, in the great majority of instances, to come on in the hæmorrhagic or scorbutic form, the odour of decomposition being perceptible from the patient even when first brought to hospital. There is a great liability to death; blood literally pours from the bowel, intermixed with only a few shreds of what seems to be membrane. Although the depraved and dissipated are undoubtedly more subject to this form of disease than the steady and abstemious, the latter are sometimes carried away by it in a very short period of illness during the more unhealthy months.

It is not the object of these pages to enter into the details of medical treatment of disease in China. This, as a matter of course, must be conducted according to the grand principles that hold good elsewhere. I would remark, however, that in many cases of persons affected with one or other of those just alluded to, and which, we may fairly conclude to owe their origin to the existence of powerful morbific influences of a local nature; the fact ought never to be lost sight of, that on the first check being given by remedies to the progress of the disease, it becomes then matter of consideration whether or not perfect recovery is likely to take place unless he be speedily removed beyond the sphere of those influences. I believe, in fact, that

of Africa and Hong Kong, at both of which places the peculiarity of the *cachexia* established by long residence, is no doubt produced by the peculiar emanations that arise from the soil there, as contradistinguished from those produced from the soft alluvion of Bengal.

few persons who have suffered from a severe attack of endemic disease in the south of China recover until after they have left the country for a time.

Hepatitis.—Diseases coming under this head are decidedly of less frequency in their rate of occurrence in an independent form than they are in India; as complications, however, in cases of dysentery, they would seem to be fully as common, if, indeed, not more so, than in that country, although I regret I have no statistics available showing the precise rate of occurrence of them in the south of China.

Phthisis.—This affection, in its confirmed form, and in its earlier stages, or those of tuberculosis, is far more frequent in its occurrence here than would be expected by those who still believe that a warm climate is favorable to persons who have a tendency to pulmonary consumption, or suffer from the disease in an advanced form. These remarks are no less applicable to civilians than to soldiers. Many young men, predisposed to phthisical disorders, take situations here and elsewhere in the tropics in the hope of arresting the tendency to disease, and in some instances their hopes are realised; they gain strength, health becomes re-established, and they return home after a greater or less length of time robust and strong. In the majority of cases, however, more especially among soldiers, the original tendency to the disease becomes aggravated, and active phthisis becomes developed, a result which is doubtless attributable to the combination of circumstances attending military life.

A few of these circumstances may be mentioned, as they affect soldiers especially, and are not applicable to civilians.

1. Soldiers are crowded together in barracks to a degree unknown among civilians.

2. When in a damp and warm climate, like that of the south of China, they are thrown into a state of perspiration from any cause; they have not the means, on returning to their quarters, to change their clothes and make themselves comfortable, as civilians have; they must remain as they are, in their moist clothes, and with the cutaneous secretion still in contact with their bodies.

3. Military duties, although not in themselves actually severe, are of so constant a nature as thus to effect a depressing in-

fluence upon the men, and this influence is still further increased by the night duties of sentries and picquets, on which they must necessarily proceed.

4. Barrack rooms being far less comfortable than private dwelling-houses, the soldier has thus no inducement to remain at home, he therefore seeks excitement of various kinds abroad.

These and other circumstances tend, in an especial manner, to lower the general powers of a soldier in the south of China, and thus to render him more liable than might have been supposed to affections such as this.

Apoplexy.—Whether we include under this name the disease ordinarily so called only, or that known also as *coup-de-soleil,* we find that the number of cases that arise are comparatively few here. In this respect the endemic affections of the south of China differ, as they do in many others, from those of India.

In regard to the native Indian troops, the diseases that prevail among them have a very apparent and remarkable connection with the peculiar habits of these men. They are, in part by the prejudices of caste, in part by the power of early habit, prohibited from indulging in the use of stimulating, or, indeed, of nourishing food. Few eat meat, and they who do, consume it in small quantity. Then again, as regards dress, the state of half nudity in which, according to the customs of their native country, they walk about, is not only indelicate to our eyes and those of the Chinese themselves, but unquestionably renders them liable to diseases to which they would not otherwise be nearly so subject.

As a result of the first peculiarity, diseases of debility are all very fatal among them; and as a consequence of the second, they manifest a great liability to inflammatory diseases of the chest, to rheumatism, and to diseases of the heart. It is, indeed, a frequent occurrence to see natives of India prostrated from what seems to be mere prostration of the vital powers; no local disease can be detected, no definite symptoms are present—the person is merely weak; and in not a few instances this weakness increases, despite of treatment, until at last life fails.

In bringing this part of my observations to a close, I beg to append the following tabular view, which, in a statistical point, will not, I trust, be deemed valueless.

A Table showing the degree of fatality of particular diseases among British and Native Indian Soldiers stationed in the South of China, from April, 1860, *to March,* 1861.

Diseases.	Number of cases of death among British and Natives from April, 1860, to March, 1861.																								Total British.	Total Natives.
	April.		May.		June.		July.		August.		Sept.		October.		Nov.		Dec.		January.		Feb.		March.			
	Brit.	Nat.	Brit.	Nat.	Brit.	Nat.	Brit.	Nat.	Brit.	Nat.	Brit.	Nat.	Brit.	Nat.	Brit.	Nat.	Brit.	Nat.	Brit.	Nat.	Brit.	Nat.	Brit.	Nat.		
Dysentery, acute and chronic	2	1	1	5	...	3	6	1	3	2	2	2	2	...	...	1	4	...	2	...	...	...	1	...	23	15
Phthisis pulmonalis	1	...	...	...	1	...	2	...	...	1	...	1	1	...	...	...	...	...	1	...	...	...	...	...	6	2
Pneumonia	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	1	...	...	...	...	1	3
Fevers	...	...	2	1	4	4	19	7	5	5	9	1	10	3	3	...	1	2	2	2	...	...	...	...	55	25
Cholera, spasmodic	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	—
Peritonitis	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	—
Coup-de-soleil	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	—
Apoplexy	...	...	1	...	...	1	...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	4	1
Intussusceptio	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—	1
Rheumatism and chorea	...	...	...	1	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	—	3
Syphilis	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Diarrhœa	...	...	...	...	4	...	2	2	2	...	1	...	2	2	...	1	1	1	3	1	...	...	...	...	15	7
Caries	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	—
Bronchitis	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	—	4
Carditis and morbus cordis	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2
Debility	...	...	...	...	...	...	1	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	2	1	4
Hepatitis	...	...	...	...	...	...	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	—
Accidents	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	1
Gangrene	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	—	2
Dyspepsia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	—	1
Erysipelas	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	—	1
Delirium tremens	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	—
Nephritis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	—
Paralysis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	1	1
Icterus	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	—
Totals	3	2	7	9	10	13	34	11	14	10	13	5	15	7	3	6	9	3	10	4	1	1	2	3	121	74

Average strength, British, 3280; Natives, 3150.

On many occasions I have been struck with the similarity in character of some diseases, more especially fevers as they affected British at Hong Kong, and what some years ago I have seen at Cape Coast Castle. Here, as on that part of the African coast, many persons seem to suffer from a febrile cachexia, with great decrease in the red particles of the blood; medicine in such instances has little or no effect; the system appears to be under the influence of some local poison, from which it is necessary that the person be removed without delay, if it be intended that he should have an ordinary chance of recovering.

In the preceding notes, some circumstances have been mentioned which support the belief that the local peculiarity of disease on the island of Hong Kong is occasioned by peculiar influences in operation there. That some of these influences are, in all probability, of meteorological origin, would appear, from the fact often observed, that a distinction can almost always be observed between the phenomena of attacks of fever occurring at Victoria itself, where the atmosphere is for the most part still, very warm, and moist, and those that occur among the troops stationed at "Stanley," on the south side of the island, where the regular monsoon wind blows uninterruptedly. There are many circumstances, however, that show unmistakeably that the local peculiarity of disease on the island arises from causes of a terrestrial origin. Some of these have been alluded to in the present chapter; as a further explanation, however, of the circumstance, as well as of the similarity which exists between the phenomena of some forms of disease here, and on the coast of Guinea, I venture to add a few extracts from notes bearing upon this matter which I took several years ago.

Adverting to the coast of Africa, from Cape Palmas to the River Volla, Mr. Montgomery Martin remarks that "the clumps of hills which are to be met with in every direction, are composed principally of gneiss and granite; mica slate is found to enter into the composition of some at no great distance from Cape Coast Castle. These rocks, from containing large proportions of felspar and mica, are rapidly passing into decomposition, more especially such as are exposed to the influence

of air and water; the result of decomposition is a clayey or argillaceous soil."

The same author, adverting to Hong Kong, writes thus:— "The structure (of the island) may be briefly described as consisting of decomposed coarse granite, intermixed with strata of a red disintegrating sandstone crumbling into a stiff ferruginous clay." "Gneiss and felspar are found in fragments." "That the granite is rotten, and passing like dead animal and vegetable substances into a putrescent state, is evinced from the crumbling of the apparently solid rock beneath the touch, and from the noxious vapour, carbonic acid gas, or nitrogen, which it yields when the sun strikes fiercely upon it after rain."

Having related thus correctly the nature of the soil upon which the town of Victoria is built, the author continues, "The strata appeared like a richly prepared compost, emitting a fetid odour of the most sickening nature, and which at night must prove a deadly poison. This strata quickly absorbs any quantity of rain, which it returns to the surface in the nature of a pestiferous gas." . . "This position of the town of Victoria, which may be likened to the bottom of a crater with a lake, prevents the dissipation of this gas, while the geological formation favours the retention of the morbific poison on the surface, to be occasionally called into deadly activity."

It will be interesting to consider one or two other points brought forward by this author, as not only being calculated to throw considerable light upon the subject now in hand, but upon fever elsewhere as modified by geological formation. According to him, "Dr. Heyne observes that the ordinarily received opinion as to vegetable or marshy origin of fevers will not hold in the south of India, for the hills are not more woody than in other *healthy* places." . . "Now, if it be found that fever exists constantly and invariably among certain descriptions of hills, while others of a different composition are as constantly free from the same, would it not become reasonable to suppose that the nature or composition of the rock itself must furnish the cause of the calamity." We are further informed that in southern India, "the hills where (fever) is found to prevail, appear at first sight to be quite harmless, as they are granite." . . . "They contain, however, besides quartz, felspar and mica,

a great proportion of ferruginous hornblende, which, by its disintegration or separation from the rock, becomes highly magnetic, and in which I suppose the cause resides which produces this fever, besides a great train of other disorders."

From these quotations it is plain that the dependence of particular types of disease upon certain local conditions, has been suspected by writers on these subjects. And the circumstance assumes much scientific interest when we thus discover that not only is there a great similitude between the type of disease at Hong Kong and at Cape Coast Castle, but that a similarity also exists between the geological formations of these two interesting but not very salubrious localities.

CHAPTER III.

CANTON.

The Pearl River and its banks—Whampoa—Canton—The Chinese contrasted with the Indians—The British force in occupation—Chinese prisons—Honam—A tea manufactory—History of tea—Lacquer ware—An aquarium—Blind beggars—Superstitions—Sickness—Table of temperature.

I HAD not been long at Hong Kong before I had occasion to visit the city of Canton. To do this two American steamers give the opportunity daily.

Starting punctually at 8 a.m., the "White Cloud," for such was the pretty name of the vessel, shot away as it were from her anchorage, scattering far and wide the numerous native boats or sanpans that up to the last moment had clung to her, for no sooner did the huge spider-like arms of the piston, which was on the high pressure principle, begin to move high above the deck, than the owners of the small craft let go their hold, and paddled away as fast as oars and sculls could take them.

And now the "White Cloud" was free. Away she went at a rate of not less than fifteen knots per hour. A group of passengers were on deck; binoculars and telescopes were in constant requisition as they looked first at the town that now lay behind us, then at the shipping that lay chiefly to our right, but also less thickly around us. Soon we turn a sharp point of land, and Hong Kong is shut out from the view; we are in the Canton or Pearl River, which here is a broad estuary, dotted with high peaked islands of various sizes. The channel through which we are dashing against the stream is bounded on one side by one of these islands; on the other the banks are rocky,

precipitous, and irregular; granitic boulders lie about in heaps; red gravel extends between. Projecting spurs of hills are separated by green fertile valleys, through which a rippling stream is seen to run; and an apparently neat, clean, and comfortable looking village is built at the most sheltered part; its aspect leading us to believe that the inhabitants are far removed from want.

The estuary of the river, at first so broad that one side is not visible from the other, continued gradually to narrow as we advanced. The hills on our right became less high and less rugged; and at about midway between Hong Kong and Canton we reached the narrowest part of it, where it rushes between the two projecting hills, and past an island upon which once stood the well known Bogue Forts, which first were captured by the British on the 25th of February, 1842.

From this point the banks upon both sides of the river became flat and fertile; large plains, green with vegetation, and rich with growing crops, extended far and wide; the country is interspersed with hamlets and villages, all of which looked from the distance comfortable and in good repair, far superior to the huts of the Scotch or Irish labouring classes. Amidst all the luxuriance and richness, however, there were two or three circumstances that I could not help observing at the time. There were no pasture fields, neither were there any cattle grazing; there were scarcely any birds to be seen, and it is remarkable how the comparative absence of the feathered tribes gave to a person a feeling of desolation, even in the midst of so much human and such profuse vegetable life as we saw around us. Again, we saw large numbers of plantain or banana bushes planted in gardens and in fields past which the "White Cloud" cleft her way. We saw also rice field after rice field, deeply irrigated, beautifully green, and extending, as it seemed to us, for miles uninterruptedly. Yet the landscape had in reality nothing tropical in it. How different was the character of vegetation here, for instance, from what it is along the banks of the Hooghly, as we approach Calcutta, situated in much about the same latitude as Canton. Yet the difference is at once accounted for when we remember that the climate of Canton is an extreme one, for while in summer rising so as to equal in

temperature Bengal, the thermometer in the winter months often sinks to freezing. This is a peculiarity more or less of the eastern shore of all continents, and is one reason why plants, elsewhere found in high latitudes, are in China found growing among others that we look for only in the tropics; for instance, at Hong Kong the pine and the plantain grow side by side.

About an hour before arriving at the termination of our journey, we reach Whampoa, a mean looking place in itself, the greater part of its houses built actually over the river by means of stakes, upon which the lower floor is placed. Our vessel stopped here but for a few minutes to put out and take in passengers; and now we had another opportunity of observing and admiring the wonderful dexterity with which women and girls managed to "hook on" their boats or sanpans to the steamer, and with what agility they rushed about in search of "fares."

The river is here crowded with vessels of different nations; many of the ships of very large size. The few European residents live on board "chops," or hulls of junks and other vessels anchored in the middle of the stream. It seemed strange to us to see signs upon these, one for instance intimating that the "chop" in question was the post office, another, that there was the dispensary, two very useful institutions in their way.

It is more than probable that the residents in these floating houses do not consider the state of affairs sufficiently settled to justify them in dwelling on shore. Notwithstanding all the disturbances, however, by which the south of China has for many, and more especially of late years, been distracted, Whampoa is rapidly becoming a place of great trade and importance, it being the port of Canton, much as Blackwall is as regards London.

Docks have of late been formed here, which, although somewhat rude in construction, are capable of admitting the largest-sized vessel that comes up the river; there are the usual number of store-ships, marine stores, sail-makers, &c., that are found at home in the vicinity of shipping; all, it is said, driving a flourishing trade. This place is also somewhat famous upon another account; the Chinese, generally speaking, have a

great dislike to killing bullocks, looking upon them as too valuable to be eaten. Our shipping, however, has for so many years remained off Whampoa, and English sailors have so long had beef supplied to them here, that the rearing of cattle for slaughter has long since become a regular item of business at Whampoa; and now the greater quantity required for the rations of our troops, both at Hong Kong and Canton, is obtained from that place.

Arrived at Canton, I landed by one of the boats, thousands upon thousands of which line either bank, and crowd the face of the river; their jolly, smiling, and generally good-looking female crew sculling and pulling, or standing talking together and laughing, as if there was no such thing as care in this world—at all events as if they felt it not.

Sing-sing, or "flower-boats," gorgeously painted and decorated, towered high above the humble "sanpan," or ordinary river-boat. It was yet day, however, and therefore not the proper time to see the interior magnificence of these floating theatres. They must be lighted up at night to show the stranger all their beauties; and, unfortunately, for night we cannot wait. Meantime, our fair rowers have run us ashore somewhere—it is evidently not the regular landing place, for we look in vain for any person to take our baggage, which is speedily landed upon the shore by our "Tankia"* boat-women. Here there are evidently no idlers nor hangers-on waiting for a job, all are busy attending to the business they have actually in hand; there accordingly we stood for some time, slightly bewildered, until one of our party assumed the management of affairs, and started off to reconnoitre; soon he returned, bringing with him some of the European police, established by order of the mixed commission; coolies and chairs were speedily procured, and away we started towards the city, borne upon the shoulders of three sturdy chairmen—two in front and one behind—the strong muscles of the two leaders throwing them-

* Another class of people somewhat similar to the Tankias of Canton, exist at Ningpo, where they are known as the "To-nim." This degraded people are supposed to be the descendants of the Kin, who held Northern China in A.D. 1100, or of native traitors who aided the Japanese, in 1555—1563, in their descent upon Cheh Kiang.

selves into lines in bold relief upon their naked bodies and limbs at every step they took with us; and rapid was the pace at which they carried us along.

Entering what is called the Tartar quarter, we were carried for what seemed a very long distance through narrow, tortuous streets, all of which were paved with granite flags; at intervals we crossed small canals, by means of bridges consisting of a series of steps made of similar flags to what paved the street, and reminding us in some measure of those represented upon the well-known willow pattern plate. The houses were all of one story; indeed we learn that throughout China very few of the houses are taller than this, even when they belong to the better classes, as the natives have a dislike to one man raising his "castle" higher than those of his neighbours; the narrow streets are covered in by a bamboo trellis-work, which stretched between the roofs of the houses at either side; this, again, was covered here and there by patches of cloth, so that while the violent rays of the sun were excluded, so also was free circulation of air, and the result was perhaps even beyond our expectations.

The odours that assailed us were not only different in nature from all other stenches we had ever previously perceived, but they were no less extraordinary by reason of their variety—all different from each other, and from all others; they were, in fact, purely and thoroughly Chinese, for do not the celestials differ from all outer barbarians in everything else? Why, then, should the effluvia of their cities and large towns not be also peculiar to themselves? Of course they ought.

As yet we were in the poorer part of Canton; this was evident in many ways. Our bearers had considerable difficulty in threading their way through the crowds of passengers and coolies that were in like manner endeavouring to thread their way past us. Here everybody seemed to jostle against everybody else; chair came in contact with chair in passing; one coolie, as he carried his load at either end of a long bamboo, the centre of which rested upon his shoulder, came frequently in collision with other coolies similarly equipped, especially at the corners of streets, where the turnings are so sharp that it is quite impossible to see "round the corner." With the exception of a few members of the European police force and a

Roman Catholic priest, we met no white man. These were riding small ponies; in fact, from the dense crowds and the amount of traffic in the narrow streets, it would be utterly impossible for either of these important functionaries to make their way along the thoroughfare otherwise than on horseback, or being carried in a chair.

The shops as yet presented nothing particularly attractive; the principal part of the merchandize seemed to consist of raw and cooked meat, chiefly ducks and pork, both excessively fat and uninviting; quantities of salted and fresh fish were similarly exposed; the former piled up in heaps, the latter kept alive and fresh, in tubs for the purpose. They consisted of various kinds; but what seemed to be the great favourite was a fresh-water mullet, some of which were a couple of feet long and at least six inches in diameter. It was an unpleasant and cruel sight to see the dealers in these sometimes clutch one, and with his heavy knife commence to cut it up while yet alive; sometimes, indeed, he would first chop off its head, but generally seemed to look upon this operation as unnecessary. The split-up pieces were never cleared from their blood; the only point that appeared necessary to prove that the operation of cutting up had been done artistically, was to retain the air-bladder of the fish uninjured, and to distend it with *breath*, so that its white, glistening, rounded surface stood in bold relief out of a red and bloody groundwork.

Birds of various descriptions were exposed for sale at stalls and in shops: pigeons, fowls, and ducks, in baskets; and larks, thrushes, and canaries, in cages. Stalls of fruit were common; so also were others upon which vegetables were sold; and as we passed rapidly along we could, after a time, see that some of the shops were for the sale of porcelain, fans, hats, clothes, boots, curiosities, and so on.

Hitherto our progress had been only through the suburbs of the Chinese city. Arriving at the southern gate, we found it protected, not by a body of "braves," but by plain, unmistakeable British infantry, while a few more, who acted as city police, stood about; making the place for the time-being their head-quarters.

Verily there has been a break-down here, at all events, to

the exclusiveness with which the Cantonese authorities have hitherto shielded themselves against the outer barbarians, as they, in their ignorant self-conceit, pretend to call the people of nations not Chinese.

Once fairly in the Chinese quarter of the city, we immediately observed an improvement in the style of shops, and in the description of articles exposed for sale; in other respects, however, there was nothing to distinguish it from the portion of the suburbs through which we had just passed. It was in some respects interesting to observe the great superiority the people here possess over those of India in almost every respect in which they can be compared, and yet the latter, like the former, look upon themselves as a very superior race of people, and far advanced in the mechanical arts. This difference makes itself apparent at every step. It had, indeed, done so to us even before landing, for we could not help contrasting the intelligence, smartness, and activity, as well as the untiring industry of the "Tankia" boat population, although only consisting of women, with that painful amount of clumsiness, laziness, and helpless apathy which debase the boatmen on the rivers of lower India. This, however, was not the only respect in which a difference between the two races was at once apparent. In India the lower orders go about their daily labours, if labours they can be called, in a state approaching to nudity; certainly so close to it, that it is only habit, and habit alone, which after a time makes us forget its actual indecency. The Chinese, on the contrary, are always clothed, and, in most instances, clothed well; not even the poorest being in this respect otherwise than modestly covered, as they pursue their toils with an energy that in many instances would put our own British workmen to the blush.

Inside the shops are counters, precisely as at home, and behind these the inmates sit or stand as they wait for customers; some smoking the small paper cheroots in general use in the south of China, some joking and laughing together, and others more usefully employed in writing, with their hair pencils, an account of the sales already made, at the same time running the fingers of one hand rapidly over the abacus which to them is a calculating machine they are never without.

Magnificent ornamental work in stoneware, lacquer, wood, and ivory exposed for sale; silk of all colours and patterns, evidently rich in quality, and tempting to those who had a wife and children in the happy island far away in the western ocean.

Still pursuing our journey along the tortuous streets, we passed the shop of a native watchmaker, in which several long-tailed celestial watchmakers were at work, glass in eye, as at home—that is, in England. Then came shops whose only wares seemed to be strange-looking umbrellas, and lanterns stranger still in shape and in the strange devices with which they were ornamented; then we passed jewellers' shops, to which we determined at no distant period to pay a visit; then old curiosity shops, on the counters and shelves of which all kinds of grotesque monsters in bronze stood; and so, after passing several repetitions of these various emporiums, we found that we had reached the opposite side of the city. "The heights" were before us, with their green grass—their wooded slope. "Yeh's" yamun, the tents of the infantry regiment stationed there, and the five-storied pagoda, from the summit of which floated the tricolor, for it was the head-quarters of the French troops, who, as our allies, have joint occupation of Canton.

The British portion of this force amounts in all to upwards of three thousand men; consisting of the 87th Royal Irish Fusileers, some Royal Artillery and Royal Engineers, a small body of Marines, a few European police, and three black regiments from India.

The City of Canton, as viewed from the "heights" immediately behind it, does not give to a stranger an impression of the great wealth and extent of this, the southern capital of China. All that he sees is one succession of unpretending buildings, crowded irregularly together. At rare intervals, tall, pillar-like pagodas, fast going to decay, rise to a considerable height, and at their summit give growth to one or more trees of no mean dimensions, which must speedily be the means of completely destroying the edifice that now gives them support. In other parts of the city there are what to us at this distance seem groves of trees; these indicate the different "Yamuns," or official residences of the mandarins, as also the position of

some of the temples, around which there are always high walls, and inside these gardens and ornamental grounds, upon some of which deer and antelopes graze; thus these enclosures are of a size to which there is nothing similar in the western cities.

We have no difficulty in following with the eye the course of the wall which encircles this city. Each of its four gates is ornamented, and at the same time rendered better capable of defence by a tower built over it, of course very Chinese in its style of architecture. At a distance of probably three miles from where we stand, the river glides along its tortuous bed, its surface glittering in the sun. Masts of innumerable junks are seen projecting high above the level house-tops. And in the early morning one of the American passage-boats that ply between this city and Hong Kong, may be seen starting on its downward journey.

The traffic, crowd, and bustle in the narrow streets of Canton are so great, that a stranger, when visiting the city, ought not to trust himself on foot. The heat and closeness of the atmosphere there render it dangerous for a person to walk in the purlieus of the city during the summer months. Indeed, more than one officer have already fallen victims to fever caught while walking along these very streets in search of curiosities, or simply "curios," as they have come to be called in the local phraseology of southern China.

Of the two modes of travelling here procurable, namely, a "chair" and a pony, the latter is decidedly the preferable; you can carry an umbrella above your head, your rate of progression rests between you and your pony, and you *can* make it understand, by means of the bridle and the heel; but with a set of chair coolies you are next to helpless. When, therefore, you go lion hunting in Canton, I recommend you to go on pony-back.

One of the first of the public buildings to which we paid a visit was a common prison. Entering a rickety building, quite unlike what our ideas of a prison had led us to expect, we found ourselves at once in close proximity to the wretched inmates. Several of them were lying upon the bare, damp, mud floor, a large collar or cong around the neck, and so broad as to prevent

the possibility of the wretched man feeding himself. We were informed that many of these, unless they have friends to come and feed them, actually die of starvation; but we were also told, upon the authority of another informant, that they often attain a remarkable aptitude in *tilting* rice up and catching it in their mouths. At all events, this punishment is one of as cruel a nature as is practised even in China, the prisoners having to bear this heavy collar constantly on them for months in succession. In another building, similar to this one, on the opposite side of the street, we were guided from the door by which we entered, along a very long, damp, dark passage, at the further end of which we entered a loathsome, square cell, partitioned off and rendered secure by perpendicular beams of wood, extending from the floor to the ceiling. In this cell the inmates were huddled together like so many animals; some lay at full length upon the damp, mud floor, others were sitting up, few of them had on more than a few rags of clothing; the majority were in a state of perfect nudity, their bodies besmeared with filth and crawling with vermin. Some of those nearest the palisades that divided off their cell, showed us through these, bare limbs, emaciated, filthy, and affected with sores of the most horrible appearance, from the effects of neglect.

Many of these unhappy beings were subjected to their present sufferings, not from any crime committed by themselves, but because a relative of theirs may have been in the ranks of the Taiping rebel party; others were no doubt falsely accused of crimes; and some there were, we may fairly presume, who were thus expiating crimes committed by their own hand, and who were doomed never more to see the light of heaven, except during the brief period of their passage to the eastern gate, where, on what is said to be a potter's field, their heads will roll in the clay, struck off by the blow of the executioner. It may be asked, how comes it that such things exist?

Crossing the river we land upon the island of Honam, upon which, since the destruction of the foreign "factories," the chief part of the export trade is carried on, and all the most important native houses of business established. I visited a number of the latter, but could see no other way in which they differed from the branches of the said houses we had already seen in the

streets of Canton, than that the assortment of goods exposed in them was somewhat more extensive and, it was said, the individual articles a little cheaper than in the latter.

One of the largest establishments on the island, visited by us, was a building specially devoted to the cleaning and assorting of teas for the market: within the building was a large and spacious hall; at tables, placed at convenient intervals in it, sat a number of men and women, at a rough estimate exceeding a hundred in all. Each had a basket before them containing tea, and from it they picked whatever was objectionable. In another part of the building stood a couple of small winnowing machines, or "fanners," as their larger representatives are called in Scotland. These were both at work, the tea being passed through them so as to separate the finer portions of it from the coarser; and piled up on the floor were heaps of what we may presume were different qualities of the herb, prepared for the market, and ready to be packed in boxes. The apartment was ornamented with flowers and shrubs in pots. A delicious odour of tea pervaded the air we breathed; everything around was scrupulously neat and clean; the people employed in the establishment were in their persons also clean, were well clothed, evidently well-fed, unless appearances belied them sadly; and if smiles and good humour indicate personal happiness and contentment, these inestimable gifts must have been theirs also. It is some consolation to know that one article, at least, of western luxury is prepared by people who, while they minister to the enjoyment of others, themselves are able to participate in some of the pleasures and enjoyments of life. I would that this much could be said of many nearer home, who in furnishing articles of luxury, and often of needless extravagance, are themselves unable, by their work, to supply the merest necessaries of life. Take, for instance, the dress-makers. It were well, indeed, did they, living in a Christian land, find their occupation as profitable as the tea-pickers of heathen China find theirs to be to them.

Before taking leave of this very attractive establishment, I would observe that, according to Mr. Williams, the knowledge of the tea plant among the Chinese cannot be traced farther back than A.D. 350; but its general introduction does not date prior to A.D. 800, at which time it was called "tu." The character

soon afterwards underwent a slight change, and obtained its present name of "cha;" the name by which, I may observe, it is also known in India; having no doubt been introduced into the latter country with the herb itself, viâ Thibet.

Here also are some of the manufactories of lacquer ware, for which both China and Japan are famous; but the latter more so even than the former. As we walked through some of these establishments we could not withhold our admiration of the exquisite patterns and finish of the numerous tables, cabinets, chairs, screens, fans, &c., that were shown to us.

As it is not generally known of what, or how this lacquer is prepared, I may here mention that the beautiful polish is, according to the author already quoted, produced by a composition of lamp-black and the clarified juice obtained from a species of sumach, the *Rhus vernix* or *Vernica*. Wood oils are obtained from other plants of the same family, and the different qualities of lacquer ware are owing to the use of these inferior ingredients. A common substitute for the varnish is obtained from the dryandra, jatiopa, croton, and other members of the Euphorbiaceæ.

Taking an excursion along the city streets, we came upon an aquarium of a very primitive description, which was evidently intended by its owner to serve the purposes of pecuniary profit rather than mere pleasure. It was sufficiently simple. In a vessel partially filled with clear water, a number of dark-coloured carp, probably the young of gold-fish, swam about, their tails presenting that monstrosity which we subsequently found to be so common in China; namely, the terminal fin being divided and enlarged in such a manner as to give the impression that there are four tails. The water was evidently maintained in a proper state for its finny inhabitants, by a few branches of ordinary pond weeds that flourished in it. Of course I naturally asked myself, are aquaria not original inventions in Europe after all?

It is not possible for a stranger to walk or be carried along the streets of Canton and not be struck with astonishment at the vast number of blind beggars whom he meets. These consist of people of both sexes, each of whom is armed with a couple of small pieces of bamboo, and by knocking these together

warn the passengers of their presence, or incite charity from the more compassionate. These beggars, it is said, enjoy a peculiar privilege; they are *entitled* by law to demand relief in whatever house they choose to enter. The smallest coin is sufficient, namely, a "cash," of which 1000 or 1200 have only the value of a dollar; but once having entered a shop or a house, they most determinedly demand their "rights," beating their bamboos most energetically, and perhaps adding to the din they thus make by singing in the loudest and most discordant key that it is possible even for a Chinaman to do. Business or conversation is, as a matter of course, effectually stopped for the time; at last the "cash" is thrown to him or her, for men and women adopt the same tactics, and for a little time there is quiet, until another enters, as pertinacious with his castanets and his vocal music as his predecessor had been.

It is even said that in consequence of the privileges enjoyed by the blind, and the profitable speculation they find the "infliction" to be, sight is by no means unfrequently destroyed on purpose. That such is the case to some extent there is every reason to believe, but it also appears probable that in the vast majority blindness is the result of ophthalmia, which disease is very prevalent among the people.

Throughout China there is a great respect entertained by the younger people towards the aged, and we learned that in Canton there is an asylum for the especial benefit of those who, on account of age, are unable to work for themselves; unfortunately, however, time did not permit us to pay a visit to it. We were also informed that an excellent institution exists among the working classes here, precisely similar to "benefit societies" in England, their object being to afford the members pecuniary aid during sickness and in old age.

The custom, prevalent in Ireland and in the highlands of Scotland, of nailing a horse's shoe above the door of a house, and the supposed proof thereby communicated to the household against all the spells of witchcraft, is a matter of notoriety. In both these countries the people believe that a similar virtue exists in one of the nails that has been used in securing the shoe upon the foot, and therefore this substitute for the more cumberous "charm" is frequently used where

the other would be inconvenient, as, for instance, upon the wooden utensils which some years ago were, if they are not still, used in highland kitchens.

An approximation to this superstition exists in Canton; there, however, the people seem unaware of mysterious power which, in the west, is supposed to be communicated by a horse's foot to these implements, but, strangely enough, ascribe to the foot itself the same virtue that there is believed to reside in the shoe, or the nail that has been worn, and accordingly protect themselves from black arts and satanic influences by the simple operation of suspending a horse's hoof upon the door of their houses.

There is a point in connection with the healthiness, or rather the unhealthiness of the British portion of the troops stationed at Canton, which becomes of very great importance if it be determined to retain a force there. Hitherto the soldiers who occupy buildings and huts situated upon the "heights," and, as might be supposed, thereby removed from the malarious influences of the lower ground, have suffered very severely in health, and many have died from various diseases, especially from a very malignant form of remittent fever. At the same time the native Indian troops, whose barracks are situated upon the low ground, and in the instance of one, surrounded on all sides by swamps and tanks, which are used as nurseries for frogs for the market, there has been no unusual prevalence of sickness. It may indeed be considered, that this comparison between Sepoys and British soldiers proves nothing. Very probably it does not, and I will even admit that to compare the one with the other in any way is reprehensible upon my part. There are, however, and have been, a considerable number of soldiers stationed in the centre of the city, and surely there can be no reason why their condition should not be compared with that of their comrades on the heights. While there the latter were suffering from severe sickness, and were losing individuals of their number almost daily; those in the city were by no means unusually unhealthy.*

* In the 'Indian Annals of Medical Science,' for January, 1859, p. 254, we read that "according to Dr. Pickford (a writer on 'Hygiene'), warm winds not

In endeavouring to assign a cause for this unexpected circumstance, I find myself altogether at a loss. It is indeed useless, with our present very limited experience of Canton as a military station, to speculate regarding it. Yet the circumstance deserves to be borne in mind by those who may hereafter have more extensive opportunities than have yet been afforded of extending inquiries regarding this and allied subjects.

As regards the climate of Canton, our information is unfortunately very meagre. The most reliable series of observations are those which I transcribe below, and with which I conclude my remarks upon the southern capital of China.

The following Table (copied from the Work of Sir J. Davis, on 'China') is the result of Meteorological Observations made during a series of years at Canton.

Months.	Thermometer.					Mean height of Barometer.	Average fall of rain in inches.
	Mean maximum.	Mean minimum.	Mean temperature.	Range. From.	Range. To.		
January . .	57	45	51·	65	29	30·23	0·675
February . .	58	45	51·5	68	33	30·12	1·700
March . .	71	60	65·5	79	45	30·17	2·150
April . .	76	69	72·5	84	59	30·04	5·675
May . . .	78	73	75·5	86	69	29·89	11·850
June . .	84	79	81·5	89	74	29·87	11·100
July . . .	88	84	86·	94	81	29·84	7·750
August . .	86	83	84·5	90	79	29·86	9·900
September .	84	79	81·5	88	75	29·90	10·925
October . .	76	70	73·	85	60	30·04	5·500
November .	68	61	64·5	79	48	30·14	2·425
December . .	63	52	57·5	69	40	30·25	0·975
Annual mean .	74·1	66·7	70·4	81·3	57·6	30·03	70·625
	Total rain, 70·625 inches.						

only assist in producing, but readily waft upwards among the hills the malaria of the emanating districts.

"May the circumstance so stated, be one which in some measure explains the greater prevalence of zymotic diseases among the troops occupying the heights of Canton, than those situated in the city?"

CHAPTER IV.

HONG KONG TO PEIHO.

Off Amoy—Weather in December—The Yang-tse Kiang—Woosung—Shanghaie—Misery—Tea gardens—Racecourse—Graves—Lynch law—Neighbourhood—Bubbling well—Game—Meatao island—Peiho.

Having sailed from Hong Kong for the north of China on the 28th of November, 1860, our vessel, one of the steam fleet of the "Peninsular and Oriental" Company, was off the island of Amoy on the 30th. The coast along which we had passed during the previous day was bold and rocky, the rocks themselves irregular in shape, red in colour, and extremely barren. High conical hills, rising one above the other, occupied the back ground, while along the coast high angry waves broke into foam against its precipitous and inhospitable-looking sides. The atmosphere was clear; a tolerably strong breeze prevailed, and the air felt most invigorating after the sickly closeness on the island we had so recently left.

Now, however, the character of the coast had already begun to change. High hills were no longer in the interior; the coast line was less high and less precipitous. A few villages began to appear, yet no traces of cultivation. On the contrary, tracts of what even would otherwise have been bare and barren rock, were covered with sand. The first building that met our vision was a small Chinese pagoda, near to which we passed about noon. It was built upon an elevation, was terraced in the manner familiar to all who have taken the trouble to look at pictures of these characteristic towers; and to give it a still more characteristic look, each of the eight angles of its

different terraces had the peculiar bend upwards, of which the architecture of China is so profuse.

The temperature was pleasant, the day fine, the weather like a day at home in early autumn. An improvement was soon apparent in the appetites of all of us. By the 2nd of December we were able to enjoy a walk on deck without awnings. The temperature in the saloon in the early morning had descended to 56°, and our voyage was thus far a pleasant yachting excursion. The line of coast was still rocky, irregular, and barren as before; islands of different sizes seemed to rise in great numbers to seaward of us. The line of coast looked bare and uninviting as before; it seemed utterly deserted by birds, as were the banks of the Canton river; and never, until my present visit to China, had I any idea of the impression of solitude given to a landscape, otherwise striking and picturesque, by the scarcity of the feathered tribes.

On the 3rd of December we found ourselves approaching the lightship at the mouth of the Yang-tse Kang. The muddy water of the estuary of that gigantic stream, the dull thick haze that hung over us, and the wide expanse of water around us, land not being visible, reminded me of the entrance to the Hooghly, although the latter is very much inferior in size to that into which we were now about to enter.

The morning air was chill, yet bracing: as we advanced, the fog cleared off, giving us a view towards our left of low lying banks dotted with trees, and covered with vegetation. An occasional island, or rather sand-bank, every here and there rose from the yellow muddy waters. Ducks and wild geese crowded these islands, or swam in great flocks in their neighbourhood. A few gulls now began to fly about our vessel, but beyond these three species not a single bird was visible.

Turning sharp to the left, or "port side," from this estuary, we were in the Hoosing, or Shanghaie river. Its breadth seemed about equal to that of the Hooghly below Garden Reach; the banks were flat; villages appeared at intervals, and from their general looks seemed to indicate that their inhabitants were in the enjoyment of an average amount of personal comfort. Fields, from which the crops appeared as if only lately removed, extended to the horizon, small bulwarks being

raised between them for the purpose of more ready irrigation and division of them according to the nature of the crops to be raised upon them.

The long line of fortifications at this place, taken by Sir Hugh Gough in 1842, extends along the left bank of the river; they are said to have mounted 364 guns, and, although now dismantled, are still in a good state of repair.

The part of the river in which we anchored off Shanghaie faced directly the French settlement. There was no difficulty in recognising the quarter occupied by our allies. The barracks, then in progress of being built for the imperial troops, were of dimensions that looked out of proportion large considering the amount of French interests that needed to be protected; a large open space surrounded them where but a very short time ago densely peopled suburbs of the city had stood; and in the midst of the scene of devastation stands a huge urn, the only remaining remnant of a Joss-house that perished in the general conflagration.

The river was here crowded with shipping, rafts of timber, and native boats of various shapes and sizes. The "bund" or esplanade that separated the town from the river bank was equally crowded by coolies busy landing, shipping, and carrying to or from warehouses bales of merchandise of different kinds. These bales were carried by them suspended from the centre of an elastic pole, either end of which rested upon the shoulder of the two men engaged in carrying the load; and thus they ambled along in couples, keeping time as they went to a monotonous chant of "eh, oh, eh, oh," which being uttered in different tones by some hundreds of them, had really a peculiar and by no means a disagreeable effect.

Shanghaie and Calcutta are in almost every particular very dissimilar, and yet there was in the general look of the former something which reminded me forcibly of the latter; more especially the business portion, called the Strand. There is the slow, muddy river in both places; there is the same dense shipping, the same bustle; but at Shanghaie there are no gharries. Here the only wheeled conveyance we see in use among the natives consists of a half wheelbarrow, half-Irish car—a most extraordinary contrivance, being, like the former,

inasmuch as it is pushed before a person by means of its two shafts, like it; has one wheel, although that, instead of being at the end, and small, is of a size sufficient to project to half its diameter through the centre of the wheelbarrow, or what would be the well, and giving rise to the appearance of an Irish car, inasmuch as on either side of it is a projecting shelf, or "seat," upon which the load is secured.

On one of these which passed, a Chinawoman and child occupied either side of the projecting "well." And thus they were rolled along towards their destination, or to the point to which their fare had been paid; for, as I learnt, this is in reality the only kind of public conveyance by land in this part of China.

Along, or rather across some of the streets, barrier-gates still remained at intervals, where, a few months previous, they had been erected when the city was threatened by the Taeping rebels. At the time of my visit these rebels were reported to be within a distance of a few miles; it was said that they were appropriating the whole of the revenues of the district, but an attack by them was not then anticipated.

The native city is said to contain a population of two hundred and seventy thousand persons. It is surrounded by a wall and fosse; and so very similar are its narrow streets and low-built houses to those of Canton, that it would not be easy for a person to discern any difference between them. Here we had the same dirty streets, the same narrow, filthy canals, crossed at intervals by bridges precisely after the manner represented on the famous "willow-pattern plates," and similar to what we had seen at Canton. Here also were the same filthy stenches that had made themselves unpleasantly familiar in that city, and here also was the same succession of cookshops, eating-houses, and vegetable stalls that we had previously seen in the south.

In the city itself we found at intervals a few shops of the better description, but they were the rare exceptions, the vast majority being for the sale of articles of the most ordinary quality. Passing into one portion of the suburbs, we came upon a painful scene of misery. Adjoining one of the streets close to one of the city gateways, stood a wretched shed, the

damp, earthen floor of which was partially covered with straw, and partly by refuse of a filthy nature. Here lay three dead bodies of people, partly covered up by pieces of matting and straw; one of the number being to all appearance only just dead. A woman, almost devoid of clothes, and wasted to a skeleton by want, was wailing over the remains of this starved creature, for it was evident that want of food had been the cause of death, and in a corner of the same miserable place lay, apparently in the pangs of death, a fourth victim of starvation. This one still breathed, but was in other respects dead to all around him. It was evident, indeed, that this was a place to which the miserably poor resorted to die, when by starvation they had been brought so low as to be unable to continue their walks along the streets any longer; and here, we were informed, several daily end their wretched life.

The inclosure containing the once ornamental lakes, rocks, bridges, temples, and other buildings, at one time graced with trees, flowers, creepers, and standing shrubs, to all of which the name of "tea-gardens" had been applicable, was visited by us, as it was within the precincts of the city. Alas! alas! It was now occupied by our allies, who had converted its ornamental buildings into casernes, had uprooted the ornamental plants, and thrown down and otherwise damaged the rock-work, and filled the artificial lakes with rubbish. Well, indeed, may the native Chinese have a horror of Europeans; and perhaps it is not without some show of reason that they look upon them as barbarians!

Beyond the city is an open space of considerable extent, called the racecourse. Here, although certainly not favoured with very balmy breezes, the foreign residents take their evening ride or drive, or walk; this and the bund being the only two places where they can take exercise. This large and open space was purchased from the Chinese government for its present purpose. In levelling it, a large number of native graves became more or less exposed, and have been left in that state. Some of these now appear as heaps of earth, and others as short and low archways of brick, from under which the coffins containing the dead had been removed.

It would seem as if miles of country around this city were

crowded with graves. In one space of ground, for it was in no way inclosed, several long ranges of low ridges extended; these being divided by depressions between them, and at one end of each of the ridges stood a short, upright stone, of granite, upon which was an inscription in Chinese. This was the pauper burial-ground, the ridges were formed by the coffins placed *upon*, and not in the ground; the depressions being occasioned by the removal of the earth necessary to cover the latter up. In some places, however, the huge coffins used in this part of the country rested above ground, perfectly uncovered by anything.

In one place, as we walked along, it was evident that what was now a kitchen-garden had at no distant time been a Tartar burial-ground. Here, among vegetables and pot-herbs, the sites of what had once been graves were indicated by effigies in stone, of horses; in others by effigies, in granite, of men, these being eight or ten feet in height. Of the latter effigies, two were placed facing each other, their looks were directed downwards, their hands crossed upon the breast, as if sorrowfully contemplating the spot in which rested some friend or parent. While we continued our walk through this vast city of the dead, we met upon the road, or pathway, three coolies. Each of these carried, suspended from either end of a pole upon his shoulder, a large jar containing mouldering human bones. The men were no doubt thus carefully conveying to some dutiful son the mortal remnant of what Mr. Meadows calls, somewhat irreverently, "potted ancestors."

Returning near the outskirts of the city, we had an opportunity of seeing the measures by which theft is punished in this part of China. A man, who had evidently been taken in the act of thieving, was now undergoing one of the milder processes after the manner recommended by Judge Lynch. He was securely tied to a tree by means of a good thick cord; the "injured individual" was himself appealing to his feelings by repeated, and by no means slight blows of a heavy stick; and after belabouring until he was tired, he undid the wretch, and threw him, neck and crop, into a canal, where he must have got a most sound ducking before extricating himself.

Having resolved to take a long walk, a friend and I started

early one afternoon, with the determination to explore as much of the neighbourhood as a few hours of daylight would permit us to do. Water-courses and canals everywhere intersect the country, and along the raised banks of these are the only pathways for pedestrians. For miles, graves of various shapes and sizes thickly cover the surface, taking up much space that might have been more profitably occupied by cultivation. A few strips of wood appeared in the distance that looked like forest; the villages by which we passed were fenced by a hedge of privet among which was artistically interwoven a network of reeds, but in such a manner as to allow the growing twigs of the former to shoot through the top, as well as laterally, so that during the summer the hedges thus formed must be extremely pretty. Rows of trees were at intervals planted close to the canal; these forming one side of the pathway, and the hedges just described the other, must, indeed, have formed lanes through which it would have been extremely pleasant for young couples to walk as the shades of evening closed in; even supposing that the young couples were Confucianists and not Christians.

The whole country around is as flat as it is possible to be; the soil is rich and loamy, but it must be confessed that a walk is, in one respect, not agreeable. The manure used by the people is not only extremely objectionable to our ideas, but is equally offensive to our olfactories.

About three miles from the city is what is called the Bubbling Well. This natural object evolves a continuous succession of bubbles of gas; the precise nature of which I had, at the time, no means of testing, but which Dr. Lockhart* asserts, is carburetted hydrogen. The locality in which it is situated consists of the same rich alluvial soil that extends for miles around; the level of the well is probably six feet below the surface, and the whole is inclosed in a casing of mason work. It was remarked that no insects flitted over the surface, which was somewhat hazy, and by no means inviting; but a few aquatic plants hung pendant from the sides over it. Its water is not used for any purpose, but the presence of a "Joss-house" in its immediate vicinity showed that there were some superstitious associations connected with the locality.

* The Medical Missionary in China.

The crops had all been removed some time before this, vegetation seemed scanty; yet among the plants similar to those met with at home, I remarked the aquatic dock, the common dandelion, and the ivy-leaved veronica.

There was a scarcity of birds upon the fields; yet even among the feathered tribes there were some that reminded us of our far west home. Thus we met here with the magpie, the jackdaw, the common English gray wagtail, and the sandpiper.

The market appeared to be well supplied with game. Pheasants are there abundant, although in the immediate neighbourhood of Shanghaie the bird is by no means common in the fields. During a long walk I only saw a couple. Quail, woodcock, hare, and wild duck are brought plentifully for sale; partridges, although less common, are sometimes met with. Snipe are said to be abundant; and I was informed that the capercailzie is at times met with. Flocks of wild geese pass backwards and forwards at the changes of season, so that the neighbourhood must be allowed to be well adapted to the sportsman.

An opportunity of continuing my journey northward having occurred, I took my departure from Shanghaie. Proceeding onwards, the vessel on board of which I was a passenger was off Shantung promontory on the 14th of December. I note that during that and the two previous days the weather was most propitious, the sky clear, breeze moderate, and the sea extremely smooth. The temperature on deck varied from 48° Fahr., in the early morning, to 44° in the evening. Before leaving Shanghaie, I had been led to believe that before now we should have been in the midst of frost and snow; in fact, that immediately we rounded the promontory off which we now were, we should find an almost arctic climate, nothing of the kind happened however; the air was bracing, yet not approaching in degree of coldness what we had been led to expect.

On the 15th we had reached "Hope Sound," which is more or less surrounded by the Meatao Islands; now, for the first time, a slight fall of snow took place, although the temperature on deck remained at 42° at the time. A rather high wind had set in; the coast along which we had passed, and the islands among which we now were, looked inhospitable and barren; the

few villages that occurred here and there close down to the water's edge adding, by their wretchedly poor appearance, to the uninviting character of the scene.

The islands consisted of what appeared to be red and grayish sandstone, the stratification of which was very apparent from the deck of the ship. So friable was the rock, that portions of it were here and there detached and water-worn, reminding us somewhat of the "Needles," in the different forms it assumed. One fragment had been worn down in such a manner as that its lower part looked like a stem and its upper portion like the top of a mushroom. The surface of the islands had in its general aspect the character of sandstone formations. The sloping parts of their sides presented some few patches of cultivation, but their general look was black and barren.

Some natives came off to us in boats; rough looking fellows they were, too; browner in hue, and with a more Tartar look than that of the southerners. Their clothing consisted of wadded cotton and plenty of fur; thus showing the nature of the climate they were prepared for. The articles they brought for sale consisted of bread, that is, loaves of bread, not by any means unlike small rolls, such as are used in England; carrots of excellent quality, apples, a kind of cabbage, and eggs.

One kind of bird only was seen; this was what seemed, from the distance at which we had to look at it, to be the common large gray gull of the English channel; and, like our old acquaintance, our present visitor flitted over, skimmed the surface of the sea, or rested gracefully upon the wavelets that rippled it. On the 16th December we anchored off the Peiho river.

CHAPTER V.

TEIN-TSIN.

Tein-tsin—Treaty Joss-house—River—Pekin road—Means of transport—Canals—Settlement—Streets—Salt stacks—Fire engines—"Spirit" of fire—Rudeness of the lower classes—Crime and police—Female children—Infanticide—A Chinese dinner—Chinese new-year—Worshipping ancestors—Public baths—Houses of the Chinese—Crowds—Beggars—Blindness—Old guns—Physician—Conjurors—Enamel—Opium—Provision store—Temples—A Buddhist nunnery—A morgue—A foundling hospital.

TEIN-TSIN is evidently a city of vast commercial importance; it and its ramifications occupy a space around and including the point of junction between the imperial canal and the Peiho. The houses and streets are low, dilapidated, and filthy; its general look not calculated to impress a person with an idea of the great wealth it is said to contain. In general length it is not under four to five miles, and perhaps, including its entire extent, not less than three in breadth.

It is difficult to form a correct estimate of the number of its inhabitants, but they have been put down as about 800,000. As this place is a kind of depôt for articles of merchandise to and from the Corea and southern coast of China, as well as for what is brought down by the imperial canal from the Yellow River and the Yang-tsi, the greater number of this extensive population earn their livelihood by some occupation bearing upon the transport of imports and exports.

Only a comparatively small portion of the city is inclosed by walls, namely that upon the southern bank of the Peiho and grand canal. Here the walls enclose a space in the form of an oblong square, the longest sides of which are exactly a mile

in extent, and the shorter ones about three quarters. At each of the four faces, and directed to the cardinal points, is a large gate, and dividing the city between these gates are four principal thoroughfares, which meet in the centre, where a high archway over their junction forms a kind of landmark. These walls are dilapidated, although not more than about 250 years old. In some places large masses of the brick-work of which they consist have fallen down. At each corner is a buttress, and at intervals along their length similar defences, from which a partial flanking fire might be kept up, were it not for the certainty of the concussion bringing the whole fabric bodily down. Over each gateway a kind of watch-tower is raised, its upturned eaves marking the Chinese character of its architecture. There are now no guns upon this wall, but instead of being used for this purpose, its top seems to have been converted into a public latrine. At intervals along its base, heaps of compost pollute the air; and extending around its exterior, at a distance of a few yards, is a fossé in which refuse, offal, and every kind of abomination is thrown, while at each angle interiorly, a space seems to have been left vacant for the purposes of public convenience.

The general aspect of the surrounding country will be more particularly described in another place; suffice it now to observe, that extending round the city, making in all a circle of upwards of fifteen miles, is an intrenchment known as San-ko-lin-sin's wall, which was erected between 1858 and 1860, with the vain object in view of keeping out the "barbarians."

The space between this wall and that immediately around the city, is in a great measure filled with graves of Chinese, these being of various sizes, and somewhat dissimilar in shape. At a few places, fields of cultivation occur within this outer wall, and, as a matter of course, it includes the whole of the suburbs. Immediately within its southern aspect is a joss-house dedicated to oceanic influences, and in which the treaty of 1858 was signed; hence the building is now generally called "the Treaty Joss-house." A great number of its "josses" have been removed or destroyed, yet a good many still remain; some of these being of clay simply painted over, others more or less expensively gilded. Within the "sanctum" were the

Confucian tablet, and a representation of Buddha, the apartment being obscured by a dim, if not a very religious light, for as the windows were small, and instead of glass, contained panes of paper, it was no easy matter for sunlight to penetrate through that preparation of old rags.

The river, as it passes through the suburbs of the city, is not only more muddy than the Thames, but contains filth in such quantities, and of so very objectionable a nature, that I may be excused if, with others similarly situated, I looked forward with horror to having to use the abominable liquid during the period of my residence here. Wells were all so brackish as to be unfit for use; and the only thing that seemed practicable, was careful filtering of, and the addition of alum to the filthy water of the Peiho.

Across the stream, and the grand canal, several bridges of boats extend. Numerous boats were being tracked along, although at the time ice had begun to extend from its banks, but with the single exception of a Russian gun-boat, which was evidently fixed in its position for the winter, no foreign vessel was visible at this time. A very few days afterwards, however, a schooner belonging to Mr. Dent arrived—the first under the treaty—but became frozen in, and thus was "an institution" during the ensuing winter.

Extending from Tein-tsin in a north-western direction, along either side of the river Peiho, are two roads which connect this city with Pekin. That which stretches along the right bank is the one by which the greatest amount of traffic takes place. It consists of an embankment formed by earth excavated from a continuous trench upon each side, after the manner of similar embankments raised in England and elsewhere, for the support of rails. During the rainy season these trenches serve to carry away the water which would otherwise overflow the vicinity. In consequence, however, of the very destructible nature of the roadway, the heavy rains make extensive gaps in it. At intervals temporary wooden bridges have been erected in its course, and these having become severely injured, are almost impassable, even for the small country carts that are used in this part of China, and completely so for conveyances of heavier description. During nearly a whole year that I remained at

Tein-tsin, no attempt was made to repair either roads or bridges, thus both were daily going from bad to worse. Probably no funds were available for the purpose, for many circumstances tend to indicate that as the government of the country is in a state of disorganization, so are its finances in a state of bankruptcy.

In consequence of the frequency of canals, which seem to intersect the country in all directions, and are covered with boats, the actual amount of traffic which takes place by the roads in this part of China is comparatively small. Strings of travellers may indeed at all times be met upon them; some on foot, with their goods and chattels secured in the form of a "burthen" upon their backs; some in country carts, such as have been already described; some on the backs of Tartar ponies, and others upon mules, donkeys, and even bullocks, for the latter animals are sometimes used for this purpose. Merchandise is also conveyed from place to place by these animals; man being as often, perhaps, as any of the lower animals used as a "beast of burthen."

The canals, when not closed up by ice, are crowded with boats of a long, narrow form, of shallow draught, and sometimes jointed together by their sterns being joined two and two, so as the more readily to be moved along the narrow and tortuous water-courses. In the early part of the season the commodities usually conveyed by these boats consist chiefly of grain and straw, the first for food or seed, the latter for fodder; afterwards vegetables of different kinds are brought to market, then fruit in great abundance, and, during autumn, corn and grain of different kinds for winter consumption; merchandise that has been exported, and various local manufactures, being conveyed by them inland on their return trips.

On the eastward, and at a little distance from the suburbs of the city, is the portion of ground allotted, under the late treaty, as a settlement for English and French. The public road forms its boundary at the back, and its front rests upon the right bank of the river Peiho; at the time of my residence at Tein-tsin, the space was almost completely occupied by graves; a few small and wretched villages occupying sites upon it towards the river bank. During the summer, crops of different kinds covered the

small spots of cultivation surrounding the graves, and exposed coffins of defunct Chinamen; and from the extremely low position of the entire space, it became, during the continuance of the rainy season, a receptacle for stagnant pools. From these particulars it follows that much expense must be incurred in closing and filling up the hollows here before it becomes fit for the purposes of building.

The general appearance of the streets of Tein-tsin afforded us a never ending source of interest and amusement. The manners of the people, their dress, their aspect, were all so very different to what we had previously been accustomed; there was in the midst of all these peculiarities an occasional point that recalled some home usage to our mind, and yet so associated with what seemed to us grotesque and odd that, for a considerable time after arriving here, a walk through the purlieus of the city, dusty and crowded as it was, was nevertheless a source of gratification. The crowds of people by which they were usually blocked up were more dense than anything we are accustomed to see, even in London; I shall allude more particularly to them by and bye. I now note that in these crowded streets were one or two peculiarities that reminded us of home. Thus, there were men carrying what seemed to be advertising boards upon their backs and chests, as we might see at home. Others were calling out what they had to sell. Some shops were evidently closed, and upon the shutters were placed obliquely, and in other positions, what we may presume were notices of removal. In some of the shops by which we passed were Chinese drawings of different kinds; those that represented native subjects were by no means bad; but those that were intended to represent foreigners were caricatures of the very worst description.

In the market, fish, hard and completely frozen, was exposed for sale so early as the 20th of December. On visiting the shop of a native confectioner, who, by the way, was a Mahometan, he at once placed before us sponge cakes of most excellent quality, although, perhaps, with a *leetle* flavour that showed them not to be English. Candied fruits of various kinds, many of them strange to us, but others, evidently apricots and quinces, were offered to us, and were all most excellent.

On the left hand bank of the river Peiho, and extending to a

distance eastward of upwards of a mile from the town, are a number of objects that look like so many huge haystacks. These are stacks of salt, this being a great mart for that article. Towards Taku there are extensive salt-pans, where its manufacture is carried on upon a large scale; and the greater part is brought up here to be stacked, and also taxed.

In the account of Lord Macartney's mission to Pekin, a description is given of the great extent of the salt heaps here; and that description is apparently as applicable to them now as it was when first written. It seems somewhat strange that the allies, during their late advance, did not take possession of these; their intrinsic value is very great, and would have gone far to have obtained the indemnity money, if, indeed, they would not have been worth more than the entire sum. Besides this, cutting off the supply of this material would, next to stopping that of grain, have been a very effectual means of bringing the government to terms.

A very few days after my arrival, I had an opportunity of seeing the proceedings of the fire-brigade. While walking along the street, a man rushed rapidly past me, raising as he ran, the alarm of fire. He was distinguished by a badge, consisting of Chinese characters upon a white ground, and this was placed upon the front and back of the loose coat he wore. While he ran he shook above his head a kind of rattle, which consisted of an instrument formed of a succession of small drums, secured transversely upon a long handle; this was rapidly moved backwards and forwards by a succession of turns of the wrist, and the motion thus given, acting upon a number of "tongues" or clappers, which then beat upon either end of each of these drums, created a noise that might be heard at a great distance. A few seconds afterwards a large body of men began to pass rapidly along, these were all dressed in a particular kind of uniform; many of them had flags in their hands, some, lanterns suspended from long poles; and, indeed, from what was seen, not only now, but upon numerous other occasions of fires, it would seem as if waving flags, and carrying lanterns of different coloured lights, formed matters of no little consequence in the proceedings of Chinamen when believing themselves to be extinguishing a fire. Four men carried upon their shoulders,

by means of a pole, what we were informed was the fire-engine itself. It was both neat and portable; was said to have been borrowed in idea from some English engines at Canton, although this fact the Chinese themselves resolutely denied; and although when in use, very inferior to our home engines, is, nevertheless a very great acquisition in a city where, as here, the houses, consisting chiefly of wood, matting, paper, and reeds, are particularly liable to catch fire. The natives themselves call this kind of engine the water dragon, a name by no means inappropriate, expressing, as it is probably intended to do, the embodiment of the property possessed by that *element* to destroy the destructive *element* of fire.

A few minutes brought us to the seat of conflagration. Four engines were speedily in full play, sending their jets upon the flames; but we then observed that the engine itself had to be supplied by means of buckets, so that sometimes, notwithstanding the vicinity of the river, there is much difficulty experienced in maintaining adequately this supply.

When left to themselves, the natives are at a great loss as to how to proceed at a fire; their exertions consisting chiefly of rattling their alarms, beating gongs, waving flags, rushing about with their many coloured lanterns, and loudly vociferating. Now, however, that they are guided and directed by the establishment of the British provost-marshal, they prove themselves both active and energetic.

The people here have a very peculiar superstition regarding what they consider to be "the spirit of fire." It having been deemed advisable to make an opening through the city wall for the purpose of enabling one of the regiments to reach a parade ground more readily, and a few days after this was done a destructive fire having occurred in the city, a deputation forthwith waited upon the commandant to lay before him a grievous complaint. According to them, the spirit of fire invariably came from the south; they pointed out, what was indeed a fact, that none of the doors of their own houses opened towards that direction as, if they had, this destructive spirit would unquestionably have long ago devoured them. They pointed out what was no less true, that even the outer opening of the southern gateway was made, by means of an external wall, to open to the

westward; but now, said they, of what use are all these precautions? the spirit has obtained an entrance through the gap you have made in the wall. You yourself see that a fire has already occurred, and unless you shut that up again, the entire city will be consumed. But the gap was not filled up; the city had not been consumed at the time I took my departure therefrom. Probably some of the troops destined to continue in occupation of it would not have much regretted had the prediction been realised.

In taking some long walks in the neighbourhood, we often made a point of walking into the houses of the Chinese. In no one instance were we received otherwise than with the greatest politeness. The owner or occupant of the house invariably returned our salutation of "tsin tsin," inviting us to sit down, and immediately pouring out for us the weak infusion of tea, without sugar or milk, that is to them what beer is to the native Saxon. If we enter a shop we are often invited to partake of tea in like manner; but in private houses, always, small cakes of different kinds being also placed before us.

Unfortunately for myself, I knew nothing of the native language. When visiting the houses of Chinese, however, I always went in company with some person who was more accomplished than myself, and was told second-hand by them what the nature of the conversation had been. We were invariably questioned as to our "honorable name," our honorable age, and how many children had the honour of calling us father; the number of the said children being supposed to include only sons, for in this *very civilised* land daughters, poor things, go for nothing!

The natives of China in their intercourse with each other are polite in a degree unknown among the common orders in England when they address each other; and, as already observed, the better classes of the Chinese are remarkably polite in their communication with foreigners. The remark, however, does not apply to any of lower social rank than the shopkeepers and better classes of artizans. The masses, consisting of labourers, the lower orders of tradesmen, are probably more than equal to the corresponding classes in England in their want of respect for their superiors, or of anything approaching politeness towards each other. As a rule, the manner of these

towards English and other Europeans indicates a degree of insolence to which, in any other country than China, occidentals are totally unaccustomed. A Chinaman will, for instance, not hesitate, without the slightest provocation being offered, to knock against an European whom he may meet in the street. In wet weather he will, as a rule, monopolise the narrow side pavement or pathway that exists in some of the streets, and passively resist any other means of passing, by the foreigner, than what is afforded by the dirtiest and most slushy portion of the thoroughfare—that is, if the latter individual is sufficiently amiable to take it. When engaged in carrying bundles, loads, or in conveying water, they unhesitatingly come against a foreigner. "Chair" carriers will, if permitted, come direct at an European if he is walking in the street, and there be abundance of space by which the chair might pass. Natives on horseback will, in riding along the street, if they happen to be *behind* an European on foot, make the horse go at a swift rate past the latter, so that by a sudden collision against his shoulder, he may consider himself lucky if he escapes being made a "spread eagle" of.

These are matters of notoriety to almost all officers and men who were stationed at Tein-tsin during the first year of our occupation of that city. It is true that one or two of our countrymen whom I have met have failed to see anything in the conduct of the lower orders towards them but what was indicative of the greatest possible amount of politeness, even although they had met in their own persons with the behaviour I have briefly alluded to.

It is right, however, that credit be given where credit is due. Among the people themselves crime would appear to be comparatively rare, and altercations between people in the street are seldom seen. But few police are usually to be met with during the day, except a few British soldiers who have been converted into constables for the time being, and organised as such under the orders of a provost marshal.

The rarity of crime among the Chinese would seem to be in a great measure attributable to the habitual deference which they, as a people, are taught to pay to constituted authority, rather than to the efficiency of their establishments for the repression and punishment of offences. One of the doctrines

inculcated by Confucius, their sage and lawgiver, is the necessity of obedience to authority, whether that be exercised by a parent, by a magistrate, or by the emperor. This is taught to children with their earliest lessons, and as they grow up, forms the rule of their conduct towards each other and towards society. We must, therefore, allow that there is something good even in Confucianism. Not that the native magistrates do not punish severely when they have the opportunity:—we have good reason to believe that among them minor punishments consist in beating the supposed or real culprit upon the face with an implement made for the purpose, until the injuries and contusions inflicted are so severe as to completely obliterate the features, and even to endanger life. Then there is the bastinado, or beating upon the soles of the feet by means of a bamboo, and flogging with an instrument similar to, but in its punishment much more severe than, the ordinary "cat." For crimes of more serious nature, mutilation and death, with or without torture, are the ordinary punishments; but it is notorious that so much bribery and so general a corruption exists among all classes in this country, that the severity or lightness of punishment inflicted depend more upon the social connexions and pecuniary circumstances of the accused than upon the degree of the crime of which he is declared guilty; while his conviction or acquittal are no less dependent upon his ability or otherwise to bring an influence to bear upon the worthy judge himself.

Throughout China generally, as well as at Tein-tsin in particular, the police take a very effectual method of giving to evil doers warning of their approach. Each policeman as he mounts guard for the night is furnished with a hollow piece of wood of particular shape, upon which, by means of a stick in the other hand, he keeps up a continual "tap, tap," until the following morning "when daylight doth appear." The police never halt or rest during the long tedious hours that they are on duty. From night till morning, in hot weather and in cold, in fair and in rainy, they steadily walk backwards and forwards along their "beat," and by their continuous tap, tap, fulfilling the double purpose of keeping themselves awake, and intimating to thieves and vagabonds their approach. It is said that the

initiated in such matters can tell from the manner in which these taps by policemen are varied what is the particular hour of the night, but to foreigners this fine distinction is not evident. The fact deserves also to be mentioned that the Russian police at Sebastopol are said to have a contrivance similar to that just described for giving to thieves and other *suspicious* characters timely notice of their approach; and we may presume that the success of the plan is equal to what it is in China.

Entering the city on one occasion, the attention of myself and companion was drawn to a young girl whom we met as she staggered along the opposite way, upon contracted satyr-like feet—an old woman of any number of years old, shrivelled, wrinkled, and very dirty, being in charge of her. The little girl was to all appearance no more than eight or ten years of age, of a clear red and white colour, very unlike the sickly pale hue of the Cashmerian beauties; eyes, lashes, and hair were dark; only a very little powder besprinkled the face, so that the complexion was tolerably well seen through it, and just enough to show that the child, notwithstanding the slightly oblique eyes, was decidedly pretty.

On many an occasion afterwards I remarked how very plain, nay, how very repulsive was the appearance of the few women whom we met staggering along the streets. True, we only see the very lowest classes, yet in Great Britain and in Ireland there are many by no means ill-looking women, but very much the contrary among the corresponding classes. This, however, does not seem to be the case here.

It was also remarked that a very small number of girls in proportion to male children are met with playing along the streets, and these facts are by some supposed to prove the prevalence in the district of infanticide. That children when seized with illness are little cared for, and that their sufferings are sometimes made the subject of jest even by their mothers, I have myself seen; but I must confess my inability to state positively my convictions that female children are destroyed here, although I can readily believe that no great consideration is bestowed upon them during their earlier years by their parents.

A graphic account of the manner in which sick children were abandoned by their mothers in his day is given in Father Ripas' account of his residence at Pekin. He says that, "when mothers are poor, and have large families, or observe any defect upon the body of an infant, or any indication of an illness likely to become troublesome and expensive, they cast away the little creatures without remorse. This cruel custom is also generally practised by unmarried women who have children, and especially by a sect called Necoo, who pretend to live in spotless chastity." He adds, "Not far from the walls of Pekin I myself saw one infant under the paws of a dog, and another between the teeth of a hog."

Children thus abandoned were carefully looked for in the time of the Father by himself and brother Jesuits. They were preserved—given out to nurse; and their numbers were so great that he informs us that "in this manner not less than three thousand children are baptized every year;" for, of course, they are reared as Roman Catholics.

Passing from this unpleasant subject, I must observe that Chinese children—and there are heaps of them in every hole and corner of streets and villages—are a jovial rollicking set of urchins as can be—noisy and mischievous, like the rising generation and "hopes of the family" in our own country. Their amusements are also in some respects very similar to those of our own children, but in others strangely different. For instance, children in China, as well as those in England, are much given to the pastime of kite flying. Yet they fly them in different ways. An English boy is satisfied if he succeed in getting his awkward-looking one, with its cumbrous "tail," to become balanced high up in the air; a Chinese urchin loves to fly kites of many strange forms and in many different ways. Perhaps the greatest favorite with him is one made in the form of the bird from which it takes its name; as he flies it, how exquisitely does he manage it! At one time the thing hovers almost motionless above his head, then suddenly it is made to dart downwards, as it were, upon its prey. The next instant it soars upwards against the wind as if it were a living bird, and then descending more gradually than before, it seems to rest lightly on or flit along the roofs and eaves of houses, and

thence as if suddenly alarmed, seems to start away upwards in the air :—all these movements being executed by the dexterity of the hand that holds the string by which the kite is managed.

These toys, if toys they can be called—for full-grown men as well as boys often spend hours in amusement with them—do not always represent birds; sometimes they are in the form of a fish, at others of a dragon; in the latter case, it must be confessed, that, although everybody knows that the thing consists of no other matter than cotton cloth and slips of bamboo, yet its appearance is by no means agreeable, as the hideous thing hovers above one's head, its long wavy folds quivering in the breeze. One most elegant form of kite sometimes used by boys, and also by "boys of an older growth," represents a ship in full sail. I have seen some of these heaving and rolling and pitching, as it were, in the clear blue sky, far over head, the white cloth of which they were made showing well the form and rig of the craft represented in the cloudless atmosphere of a cold November day.

A favorite game among Chinese children is that of spinning tops; but the one that strikes an Englishman with greatest astonishment as played by them, is battledore and shuttlecock. They use no battledores, but the dexterity is astonishing with which they keep the "cock" in the air by means of their feet alone, as almost with unerring precision they strike it with the sole. It is most laughable to watch them while engaged in this evidently favorite game, and to observe the extraordinary readiness with which they manage to turn their feet into the proper position, whether they have to strike the object as it is falling in front, on either side, or behind them. What, however, is no doubt stranger still than that boys should play it is, what I have been positively informed, although I have not been so fortunate myself as to see it, is, that the game is frequently played by young girls, notwithstanding the horrible and unnatural contraction of the feet to which they are subjected.

Our New Year's Day having arrived, a native Chinese who was employed as a teacher by some of the officers, wishing no doubt to offer us "all the compliments of the season," called for this purpose at so very early an hour in the morning, that I was not prepared for his reception; he therefore politely left

his card, a strip of red-coloured paper, that being emblematical of rejoicing; and on it in these most wonderful written characters, what no doubt was his name, titles, and honours at full length, only I did not understand them. A few days afterwards I received what I had often expressed a wish to receive, namely, an invitation to a Chinese dinner. In a huge red envelope, open at one end, was a scarcely less huge red slip of paper; upon it were the mystic characters conveying the request of the hospitably inclined celestial that I would partake of his dainties. The esteemed document having been translated for me by a gentleman who deemed himself an adept in the lore, I am enabled to give the English version of this most wonderful document, and trust that to those who have not had an opportunity of themselves in receiving such an one, its novelty will be sufficient excuse for the space taken up by it.

It ran thus—

RICE.

Ko
Ta
Tsin. Which being interpreted, mean Gordon, great, man.

On twenty-fifth day, at 4 o'clock, drink wine, drink tea, eat rice.

CHANG CHING WAN.

Chang's (the name of the host) compliments.

The yamun, or residence of Mr. Chang, was approached by us by means of numerous turnings and twistings among the streets of great intricacy; these would have been filthy, and indeed were so even now, although the intense cold having frozen everything that could be frozen, rendered their aspect something less repulsive than it would have been had the weather been more propitious. The residence itself consisted of a number of straggling buildings, all of one storey high, and thoroughly Chinese in character. Passing through an outer range of buildings, we then crossed a well-kept paved yard. At either corner tall beams were placed upright, a canopy stretching between them at the centre, so as in the hot season to afford shelter from the heat of the mid-day sun, although at the present time there did not seem to be much use for the contrivance.

Having crossed this open yard, we entered a long, narrow

room; its front consisted of one large ornamental window, glass panes taking the place here of what among the less wealthy classes are formed of paper, rendered semi-transparent by being soaked in oil. The floor of this apartment was formed of large slabs; it was neither covered by carpet nor mat. Opposite the door stood a highly-polished table, and on it were placed a number of very handsome native-made ornaments; among others, a magnificent porcelain vase with figures of birds and trees in high relief; a lantern, raised upon a stand, stood at either corner of the room; two were suspended from the roof, and each contained a candle, coloured red, in token of the joyous occasion of the party given to us. Near either end of the room stood a stove, well filled with burning charcoal; it was open at the top, except that a safe, made of wire gauze, was placed over it. There was no flue by which the poisonous vapours from the charcoal fire were to be carried off. It was evident that these, as they were formed, must become mixed with the atmosphere of the apartment. Yet, probably in consequence of the imperfectly fitting doors and windows, no evil effect is produced by what with better built houses would be very pernicious, or even fatal to those exposed to it.

Directly in front of the door, and attached to the wall, a tablet stood, having upon it in golden characters what we presumed to be a sentence. It was explained to us that it did express the moral maxim, "Not to covet is a virtue"—this to the native Chinese being a polite manner of giving expression to what is somewhat more forcibly expressed in our tenth commandment. Other sentences of kindred import, painted in golden characters on a red ground, were placed at intervals along the walls; in some places, suspended in the form of scrolls; in others, painted upon the panels that separated the apartment in which we stood from one of a smaller size, but furnished similar to it.

Our host received us most politely, bowed to, and shook hands with each of us separately. A number of small tables were speedily covered with viands, and in a few minutes after our arrival we had taken our places; our party being evidently larger than had been expected, for the consul had brought several gentlemen with him. Our hospitable entertainer would

not take a seat, but throughout "the feast" continued to heap his attentions upon all in turn.

The chairs upon which we sat had all of them arms; were strong, roomy, and well-made. No cloth covered the table, but in lieu of that it was so brightly polished and varnished, that the reflection of our faces was perfectly distinct in its surface. Knives and forks of English pattern, spoons of the native pattern; but they and forks of silver were placed before us. On the table, arranged with much taste, were dishes containing fruit, fresh as well as preserved. Among the former were grapes, pears, and apples; among the latter a species of almond seed, which after having been pickled was washed, and had a peculiarly delicate taste. There were also dishes containing dried seeds of water-melons, preserved apples, pears, and plums; and among others, the appearance of which was altogether new to me, was a pyramid of what is called here the Siberian crab.*

Amidst the small dishes upon which these various kinds of fruit were severally placed, were two, each of which contained a delicacy of a different order; one of these contained a few, very few neatly cut, small slices of ham; the other had placed upon it a pyramid of angular pieces of what, we were informed, were hard boiled eggs, that had been buried in the earth during a year. Their colour was by no means attractive, it being what to us seemed a most unhealthy gray; the idea of tasting them was in itself not pleasant, yet when these two prejudices had been got over, the buried eggs did not taste so very bad as might have been expected; but anything beyond this negative praise of them must, I fear, in justice be withheld.

This course having been removed, small cups were placed before us, containing what looked and tasted like sweetened rice water (birds'-nest soup, we were informed by one of our party who had resided previously here, is not *fashionable* in the north of China). Immediately afterwards, a *very* small porcelain cup was placed beside each of us, and filled with *Sham-shu*†, poured hot from a kettle.

* The fruit so called is that of the *Cratægus Layii*, and is by the Chinese held in great estimation, whether raw, preserved, or as jelly.

† A spirit prepared from millet, as whisky is from barley.

A root of a peculiarly white colour was next produced upon small dishes; one of these was that of the famous Nelumbrium, or water-lily, which is here esteemed a great delicacy; the other was the tuber of an edible sedge,* imported from the south country, especially Canton.

Then followed a dish kept hot by means of a spirit-lamp beneath it, as indeed were all the principal ones that succeeded; it contained shark's fin, prepared as a kind of stew, and tasted not unlike what skate at home does; "dinner rolls," cut in slices and beautifully toasted, were now handed round, tasting almost like German rusks—so crisp and good they were.

Some of the preserves which had until now remained on the table having been removed, a new series of dishes were laid upon it. In one of them were what seemed to us to be olives, deprived of their kernel, and preserved in syrup; another looked like French beans, sliced and preserved so as to be crisp, athough by what means it was difficult to suppose; for, so far as we could judge by their taste, they had not been placed in either vinegar, sugar, or salt. With this course was a small dish of seaweed, and so delicious was it that we reverted to it over and over again during the further progress of our entertainment.

The greater number of the dishes that had been partaken of having been removed, they were replaced by others. Among these was a delicious haricot blanc of kidneys and vegetables, both cut into very small pieces; pumpkins cut into small pieces and stewed in sweet sauce; ham, cooked as a mince, with honey, rice, and chestnuts (of course, without the husks). Next came one more of the celebrated Chinese dishes, the sea slug,† or Beche de mér; it was stewed in a thin kind of sauce: and as some of us had asked for chop-sticks, in order, as far as possible, to partake of our dinner in true China fashion, the slippery nature of the sea slug puzzled us sadly when attempting to raise the morsel by their unaided assistance; the more particularly as the weather at the time was so "tarnation" cold that our fingers were rendered quite stiff; a more palatable dish, however, than the sea slug, was produced along with it.

* *Eleocharis tuberosia.*

† Holothuria, imported largely from Japan and Ceylon.

This was a peculiar combination of cabbages and chestnuts, cut fine, and mashed up together. It was voted decidedly good.

This course having been discussed, hot "puffs," containing within them preserved fruit, were by the servants in attendance placed upon the small saucers which had during the repast been frequently changed in the manner of plates. These puffs were particularly good. Sponge-cakes, tinted yellow, and cut into small squares, were at the same time handed round, and a kind of gruel, or "tea," prepared from almonds, and highly flavoured by them, was placed before us in cups. It was delicious.

But our feast was not yet over—our delicacies were to follow. The first of these that made its appearance was a dish consisting of apples and water-lily roots, stewed together; then we had preserved fruits, as before.

The host, who hitherto had merely directed the attendants from a recess of the room, whence he had watched our proceedings, now walked round the company assembled at table. To each of his guests he made a few remarks; and, addressing one of our party, whose general mien and aspect were more venerable than his years would perhaps justify, he asked the gentleman, in respectful terms, "how many might his honorable years be," intimating at the same time that his own were in number sixty-seven.* As he continued his rounds, however, it was discovered, somewhat unpleasantly, that he practised a habit which, according to our notions of politeness, is decidedly out of place at or near a dinner table—he expectorated like a sailor or an American.

The time seemed now to have arrived for the introduction of the solids; all the past seems to have been looked upon as so much bye-play—as a whetting of the appetite—as the oysters of which Lord Byron, having swallowed three dozen before dinner, complained that he found his appetite not at all increased; but, if anything, rather the reverse. Perhaps, indeed, so were our appetites. Mutton boiled, goose stewed, fowl and duck, all carved, or rather torn into small pieces, were now produced. As, however, no great inroad was made upon these delicacies, they were almost instantly removed;

* According to the Chinese mode of reckoning, this would only be sixty-six and three months of ours.

small slices of pickled cucumber were in the mean time handed round, with a view, no doubt, to whet the appetite, as olives increase the gusto for claret. Cakes now appeared, very similar to flour dumplings; these, we were told, would have become small loaves of bread had they been baked instead of having been stewed, as they were; and as a wind up to this course, a dish of salted cabbage was placed before us. This was the only one that was absolutely unpalatable. It certainly was so.

The next course included a dish of cabbage in a different form from that just mentioned, and one that was far more palatable, the vegetable having been in a peculiarly pickled state. Then we had the sounds of fish stuffed with shrimps, and a very delicate and delicious dish this formed; then, what looked like a stew of vermicelli, but what was in reality prepared from the intestines of sheep cut into extremely fine slices. Then we had a stew prepared from a peculiar transparent kind of small fish found in the Peiho, and with it rice being handed to each of us, indicated that dinner was over, and an excellent dinner it was.

The tables having been cleared of eatables, sham-shu cups were placed before us. The acting consul now proposed the health of our host. It was drunk "in a bumper," and the hospitable old gentleman appeared delighted at the honour that had been done him by his barbarian guests. So delighted, indeed, did he seem to be, that he himself seized the sham-shu kettle, and, going clean round the table, helped each one of us to another "bumper;" but, alas! alas! the sham-shu was not good.

Dessert was laid in an adjoining room; we were accordingly invited to repair to it. It had neither stove nor fireplace; the temperature during that night descended to 13·5° Fahr. It is not, therefore, to be wondered at if we felt somewhat cold—in fact, we were shivering. Fruit, precisely such as had been placed on the dinner table, was here laid out; the jelly of the "Siberian crab" being served up in addition. Forks only were placed beside this jelly. Cups of sweetened rice water were again handed round. Cheeroots were now introduced; the host, who escorted us to this apartment, indulged in, and appeared to enjoy, "a weed." He entered into conversation on

general subjects with those who had a knowledge of his language, and appeared to enter with spirit on the discussion of some.

At the early hour of half-past five o'clock, the consul having hinted that it was time for us to depart, a general move almost immediately afterwards took place; each of us in due form took leave of our host, but, not satisfied with that, he accompanied us to the outer entrance of his "yamun," having already given orders that a number of his retainers should be in attendance with lights. As he walked along we observed that two servants held up his "train;" and once at the door, he again took leave of each of us, bowed, shook our hands, and finally, as we all moved off, bowed again as we retired, and, in native custom, shook his *own hand*.

The Chinese New Year does not take place until considerably after ours. The 10th of February was, on the present occasion to them, what the 1st of January is to us. For at least a couple of weeks before that date it was apparent that preparations were in progress for its celebration. The streets had become crowded with stalls of various sizes, at which cheap prints were exposed in great numbers for sale. The subjects roughly delineated upon these were, to us, inexplicable, but we may presume that they bore reference to the gaieties and festivities of the approaching season; or, perhaps, consisted of caricatures of life and manners of a nature somewhat similar to what are in England made the subject of "Valentines." The prices of many articles in the shops are now much reduced. One of the customs of the Chinese—and a most praiseworthy one it is—being to pay off all creditors at this season; failing which they are said sometimes to prefer suicide to having to begin the new year in a state of bankruptcy. Visits of friendship are made; there is much feasting and carousing among the people. For some days the shops are closed and business at a standstill. On being reopened after this recess, they and the houses are swept clean—a process of which they stand much in need, for the people are assuredly not distinguished on account of the virtue of personal or domestic cleanliness. There is, however, an emblematical meaning attached to the proceeding as now performed. It is meant to indicate that the

various shortcomings, quarrels, and unpleasantness that may have happened during the byegone year, are now swept clean away into oblivion. But this is not the only ceremonial through which the Chinaman passes at this time. Having swept his house and shop, he treats himself to a warm bath, worships before the shrine of one of his favorite idols by exploding some crackers and burning a few joss sticks, makes his oblations before the ancestral tablets, and, having done so, enters once more upon the cares of everyday life with the very laudable object to make money—honestly if he can, but to make money.

At an early hour on the afternoon of the 9th of February a profuse discharge of crackers throughout the city intimated to us that the people had commenced the ceremony of propitiating their household gods, with a view to obtain from them absolution from the peccadillos of the year that was now about to close. Shortly afterwards as we took a walk along the streets, we found them almost completely deserted, and almost completely paved with the paper remains of the fireworks that had lately been exploded.

On the morning of the following day—that being the beginning of their new year—the houses and shops, with a few rare exceptions, were closed; the exceptions were those in which enamels, jades, and porcelain were exposed for sale; the profits arising from them being too great to be withstood, even for the sake of worshipping "gods" and ancestors. Upon the front of almost every house strips of red tinted paper, having upon them Chinese written characters, were posted. These were expressive of good wishes and congratulations on the advent of the season. Upon some other houses sketchy drawings, such as have been already mentioned, were posted up, but these were not common.

Lanterns of all sizes and forms were exposed for sale along the streets. Some were covered with paper, some with transparent gelatine obtained from seaweed; all were painted with the most gaudy colours, and with designs of the most grotesque description possible. Among the designs adopted for the shape of these lanterns, that of the frog was an especial favorite. Others of them represented gigantic goldfish with monstrous tails, such as are elsewhere described as common at Canton,

and during early summer met with at this very place. Other lanterns were in the form of birds, others of grasshoppers; some represented a gigantic mantis, and others were made to resemble huge crabs.

Lanterns necessitate the use of candles instead of oil. We accordingly find that a kind of "dips" are used very generally in the north of China, and, of course, always when a light out of doors is required. These candles are coated very ingeniously on the outside by what seems to be a mixture of wax and tallow. The interior consists entirely of fat of some kind around a wick prepared by twisting raw cotton, or, in other instances, of the pith of a rush, so that the exterior layer being somewhat less readily liquefied by heat than the inner, secures the entire consumption of the latter, and effectually prevents the "running" of the candle, which is so great a nuisance with "tallow dips" in England. In the better description of houses and shops, these candles, sometimes in lanterns of most gorgeous patterns, are used entirely for the purpose of giving light, but in the poorer kinds of both, they give place to lamps of various patterns. In these oil and rush pith are the only substances used; the pith being sold for this purpose upon the street.

Upon "altars" in the Budhist temples, candles prepared in the manner alluded to, of a vermilion colour, ornamented with dragons and other strange devices, form as invariable an ornament as wax tapers of gigantic size do in Roman Catholic and High Church churches. Vermilion colour, it is to be observed, means rejoicing, and hence candles of this colour are also used at the celebration of marriages, and of festivals in general.

In addition to articles already enumerated there were exposed for sale in the streets on the occasion of the New Year various ingenious although roughly made pieces of mechanism. The figures represented by these were cut out from cardboard, and so painted as to resemble Seikhs, Europeans, and Chinese. They were capable of being moved in various ways by hidden machinery, the whole being put and kept in motion by the action of the breeze upon a small wheel projecting from the upper part of the machine.

Seated at a small stall at the side of one of the most crowded streets was a Chinaman, around whom a dense crowd had

gathered. He paid not the smallest attention to what was taking place in his vicinity, but nimbly plied his fingers modelling figures from pieces of paste and of different colours, keeping his "audience" in fits of laughter by the rapidity and the correctness with which from his simple materials he "turned out" exact representations of first the one and then the other. At the moment of our approach he was in the act of modelling a Seikh trooper, representing him as performing the double operation of executing a solo upon the trumpet, and walking off with a fowl under his arm. The figure was a decided "success," and being so, obtained an immediate sale, a small coin being the price accepted for it. In a few minutes afterwards a Royal Engineer was "thrown off"—the eyes, the beard, the buttons on the tunic, the stripes on the trowsers—in fact, all the minutiæ in the personal appearance or uniform of a member of that distinguished and scientific corps being represented with a degree of correctness and a rapidity that were perfectly astonishing.

After a little we continued our walk, and had the good fortune to pass a house in which the different members of the family were engaged in the custom of worshipping the remains of their ancestors; a small shrine, erected for the purpose, had upon it a couple of figures, probably representing Confucius and some other sage—it may have been Mencius. These figures were evidently connected with the national philosophy, for there was in the entire place nothing at all bearing upon Budhism. The shrine was decorated with flags and ornaments made of paper; a few neatly arranged piles of apples and preserved fruit stood upon it, and in the centre, directly in front of what seemed to be the principal figure, was a vessel in which bundles of "joss-sticks" were being placed burning, by each successive worshipper as he advanced, for there was a considerable crowd of members of the family present. Piles of tinsel paper were also being burnt by the people, and it was particularly remarked that they were all most orderly, and performed their ceremonies with the greatest gravity. It was at the same time remarked that there were no women present.

Around the shrine, and for some distance along the enclosed passage in which it was erected, were placed upon the walls the tablets of the deceased ancestors, who were now the objects of

worship. At a rough estimate there appeared to be more than 200 of these tablets, representing an equal number of progenitors and relations of one kind or another; the lives of all of whom, let us hope, had been such as to entitle them to the respect and veneration of those who were now worshipping before them.

We learned that the display of fruit that now graced the shrine was destined to become an item in the feast, which in China, as in some other countries that might be mentioned, follows upon almost every public display.

It was not until the 18th of the month that business seemed to have been fairly resumed, and all the shops reopened. Many of these were now filled with lanterns, in colour and shape similar to those already mentioned; in others, large numbers of children's toys: but notwithstanding all the boasted ingenuity of the Chinese, it must be confessed that these toys were in manufacture and elegance of pattern very far inferior to those of Benares.

New Year's salutations still continue between Chinese; acquaintances meeting upon the street perform to each other obeisance so profound that the tips of their fingers almost touch the ground as they stoop, for they bow from the hip as the Mussulmen do. Entering some of the shops, we observed, placed in a small niche in the wall, what were evidently the "household gods." Offerings of cakes, preserves, and sweetmeats, were neatly placed before these images; and the owner of the establishment observing that they had attracted our attention, endeavoured to explain by signs what was the meaning of the whole. Placing his hands in the attitude of supplication and looking upwards, he repeated the word Tièn, thus clearly expressing the meaning he wished to convey, namely, that these offerings had been made in order that "heaven" might be thereby conciliated.

We were informed that the festival, known as the feast of lanterns would conclude the festivities of the new year; on the present occasion, the date fixed upon for it was the fifteenth day of the first moon, which happened to be the 24th of February. The looked-for festival did not take place, however, it being as we were informed on account of the large number of foreigners in the city.

Having mentioned that bathing is one of the ceremonies practised by the Chinese at their new year, I may observe that not only then, but at other times, they frequent bathing establishments, of which there are a considerable number scattered throughout this city. One of these I entered, and will now endeavour briefly to describe.

Entering a narrow gateway that opened directly upon the street, I crossed a small yard to a somewhat spacious building. At several places along the wall of this building furnaces opened outwardly, somewhat as that of a lime or brick-kiln does, and at these natives were seated and supplying fuel for the purpose, we learned, of heating the water in the interior that was intended for ablution. Entering the building, we found it so filled with steam, that although there were several lamps burning, vision was obscure. The temperature felt oppressive to us, entering as we did from an atmosphere of less than 18° Fahr., and the effluvia that pervaded the place were absolutely sickening.

In the apartment were more than twenty males of all ages, from boyhood to old age, and in various stages of their toilet, from nudity onwards; for the Chinaman, as elsewhere observed, is not overburthened with modesty. Some were in the act of drying themselves, others of dressing; some were in the hands of the hair-dresser, who was most artistically rearranging their "tails," others were indulging in tea, which is here always served without either sugar or milk, and indeed with very little of the tea-leaf. At one extremity of this large hall was a smaller apartment, completely choked up by steam; here, amidst the vapours, a number of naked figures could with difficulty be discerned, as some, squatted in shallow vessels, performed their ablutions, and others were most industriously occupied in washing their own clothes. In a similar recess at the opposite end of the larger apartment, and also more than half hidden in the smoke and steam, was a large bath of considerable depth; in it several persons, immersed to their waist, were splashing about.

It appears that the tariff for a bath here is fifteen cash, the dollar being valued at one thousand. Here, then, is a Chinese institution that might be well adopted upon a large scale even

in England, only upon somewhat different principles, and with more attention to decency and cleanliness than are observed here, for we were told that the water in the baths is only changed once a day.

The ordinary run of houses in Tein-tsin, and, indeed, generally in the north of China, are built upon an exceedingly simple plan. Their usual style is that of an ordinary square box, the interior of which is partially divided by a partition, so as to thus form two apartments. In the one facing the street business is performed, for almost everybody transacts business of some sort; in it counters are arranged on either side or across, and behind these, sitting upon chairs or standing, as the case may be, the inmates attend to customers, run up, on an abacus, which instrument is always in use, the amount of profit they make, keep their accounts, smoke their long-shanked, small brass-bowled pipes, and talk away cheerily together.

The front of certain kinds of shops are altogether removed during the daytime, as, for instance, in those where the goods are constantly exposed, such as those of confectioners, curiosity-mongers, seedsmen, grain dealers, hardware men, old clothes' sellers, &c. In these, however, they are carefully shut up and locked shortly after sundown. Boards are placed across the whole space in the same way as shutters are slid into grooves in front of large windows of shops in Britain; the whole is then carefully secured, and the inmates seldom appear on the streets afterwards: the early closing movement is, in fact, general throughout China.

In other houses, however, very ornamental fronts separate the inmates from the vulgar gaze; this front consists then of one large window, the wooden framework seems to be in all cases according to one uniform design; a most elaborate one it is, but very neat and ornamental withal.

The view of windows without glass must appear strange, yet few of those I am now describing have any; paper is the general substitute, and not a bad one it is either. Two or more layers of semi-transparent native paper are pasted on the framework just described; and while it is said to keep the rooms in the cold weather much warmer than glass throughout would do, it admits light perfectly freely. The inmates, if curious, cannot indeed see through it what is taking place upon

the street, but the Chinese, as a rule, seem to be more zealous in attending to their own business than that of their neighbours—a characteristic, by the way, that must sound strange to the ears of some human pattern of perfection nearer our own western home. But yet there are some of the celestials who from love of display, or from a laudable desire to observe "passing events," introduce into their windows a few panes of more transparent material than paper. In the south, the shells of a large description of oyster, ground very thin, or horn made into thin sheets, serve their purpose; glass is also used by some, and in the north seems to be the only material except the paper already mentioned that is employed.

The inner room is not usually overburthened with furniture; at the furthest end, and as far removed from the door as possible, stands the sleeping-place of the male members of the family, the national "cang," which to the northern Chinaman is as indispensable an article of comfort as is the real old four-poster, curtains, feather-bed, bolster, pillows, and all, to bluff, honest, (?) happy, and snarling John Bull.

This *cang*—a very different thing indeed from the *cangue*, in which prisoners are sometimes exposed in the public streets—is an erection of brick and mortar, of a foot and a half or so above the level of the floor, extending the whole distance between the side walls, and to some six feet or a person's length from the back wall. Upon it are arranged various coverlets and other articles of bedding, according to the worldly means of the owners, such as mats, wadded cotton coverlets, or "Rezais," as they would be called in India, and furs of various degrees of fineness; the pillows being in some instances like very long narrow stools made of strips of bamboo, sometimes covered with a glazed kind of native waterproof material, sometimes apparently stuffed with cotton and like ordinary bolsters.

Such is the external appearance of the cang, but as with many other objects, an apparently simple exterior covers a very complicated interior. Near one end of the front of this strange sleeping place is a small door, like that of a stove or a furnace. We place our hands upon it: it is quite warm; we then ascertain that immediately inside there is, indeed, a fireplace, from which a flue extends horizontally to the opposite end, whence it is made

to recurve, and so on, backwards and forwards, until thus it passes under and warms the whole extent of the oven-like bed-place, upon which, instead of in which, the family is kept as warm as a pie, even during the coldest weather. Of course the last turn of the flue terminates in a chimney, and thus the smoke is carried off.

A few cupboards, with bright, large, round plates of brass around the lock, and square plates along the sides and angles, are placed at either side and probably behind the cross partition. Two or more brightly polished tables, upon some of which are Chinese writing materials, upon others various articles of stoneware, stand at the sides. A few high-backed wooden chairs with arms are formally arranged close to the wall. The floor consists of flags, or even mud; it looks damp and cold, but the Chinaman requires not carpets—his thick felt soles render him indifferent to what with us is indispensable for comfort. In the centre of the apartment stands a stove, in which charcoal is brightly burning, throwing such quantities of carbonic gas into the room as would, in the ideas of western sanitary reformers, inevitably convert the entire family of John Chinaman into so many dead corpses before morning; but which, nevertheless, does no such thing. Upon this stands a kettle "singing;" we are invited to sit down: a long-tailed celestial menial places small, semi-transparent cups before us, such as would make a fancier of Chinaware break the tenth commandment into little bits. The singing kettle is passed round, still discoursing its own "soft music." The pure infusion of the national herb streams in our little cup—the day is perchance cold without; and destitute of either sugar or milk we enjoy the hospitality of our entertainer, who usually sits directly opposite us, his hands crossed in the long sleeves, which serve to him for mits or muff. If any of our party can speak Chinese, he enters into conversation with him. If unfortunately there are none of us so accomplished, the "host" talks to whoever happens to be nearest to him, whether son, brother, or servant; no doubt selecting for subject of conversation the wonderful habits of the "untameable barbarians," who, for the time being, are making themselves domestic enough.

The Chinese trust more to clothing than to fires to maintain

bodily warmth; consequently their contrivances for heating their rooms appears to our ideas rude and imperfect in the extreme. A handful of charcoal, or a few round pieces, no bigger than goose's eggs, of coal dust, moistened with water, and then formed into lumps of that size and shape, is all that they require. It is, therefore, only upon their cang, or the immediate neighbourbood of these fires, that any person but a Chinaman could possibly feel comfortably warm in a winter's day.

In China one town is so precisely like another, that the description of one is tolerably applicable to all. The people are so conservative in their habits, that as they resist the innovations of fashion in dress, their costume being now the same as it was in the days of Confucius, so their houses and towns have hitherto resisted the spirit of improvement which has in Western Europe tended not only to beautify our cities, but to add much to their healthiness.

In walking along the streets of Tein-tsin, the visitor is struck with the bustle, energy, and apparent contentedness of the people. So densely are the streets crowded, that to make headway without being jostled is utterly impossible. Nor do the celestials take the trouble to get out of the way of the foreigner. How, among themselves, the opposing currents of human beings that fill the streets manage to get along upon their respective errands, is but one of the many Chinese puzzles that a stranger has many opportunities here of witnessing. These crowds are principally formed by men and boys; a few old women come along tottering upon satyr-like feet. Coolies pass with hurried steps, carrying heavy loads at either end of a bamboo, the middle of which rests upon the shoulder. Others are busy conveying, in a similar manner, water-buckets; a small tuft of grass, or a couple of pieces of millet stalks crossed, resting upon the surface of the muddy water which they contain, and thus preventing it from being jostled over the mouth of the vessel while being carried along. Other water-carriers are groaning and perspiring under the exertion of pushing along a large wheelbarrow, upon which six or eight of these water-buckets, all full, are arranged; at intervals a "chair," with or without an occupant, is carried along by a couple of bearers; then comes a horseman mounted upon a small, shaggy, Tartar pony, or upon a mule, or a donkey;

a string of bells around the neck of the animal keep time by their tinkling with the pace at which it proceeds. Here a small description of cart, covered if for passengers, uncovered if for ordinary purposes, is being drawn along by bullocks, mules, ponies, or donkeys, for these animals would seem to be indiscriminately used for draught purposes, and it is by no means unusual to see one of each yoked together in the same team, the driver using somewhat freely a whip of great length, not unlike the implement employed at the Cape to "touch up" the leaders. Barbers, with their implements complete, itinerant blacksmiths, bakers, cooks, sellers of lollipops, fruit, and vegetables, together with travelling tinkers and cobblers, are each calling, at the highest pitch of their discordant voices, the qualities and prices of their various commodities.

Beggars, young and old, fat and lean, half naked or warmly clad, blind and not blind, deaf and dumb, or pretending to be so, or in the full display of all their faculties, wander about pursuing their vocation, or watching for opportunities to "bag" what would, perhaps, not be bestowed upon them voluntarily. Occasionally a minstrel is seen at the door of some shop of the better class; he sings discordantly, and accompanies his ditty upon an instrument in form somewhat between the guitar and banjo. Some of these minstrels are blind, and these, it must be confessed, show by their manner of dress and cleanliness of person, that they are generally well taken care of by their brother Chinese; indeed, so much is this the case, that there is reason to believe that, if not in some instances wilfully deprived of sight, their calamity is looked upon by their immediate relations as not altogether without a few compensating advantages.

One class of beggars who are to be seen in great numbers in the streets of Tein-tsin expose themselves during the coldest part of the year—while the thermometer ranges from below zero to 12° and 14° Fahr.—having no more clothing upon their persons than a few rags round their loins, and hanging down towards their lower limbs. What strikes us in regard to these men is that they are invariably young, strong, healthy, and "sleek" looking. How is it, we naturally ask, that they are able to withstand the great cold to which they voluntarily expose themselves? A cold so intense, that with the aid of furs, and warm clothing

of various kinds, we ourselves had difficulty in preserving a moderate degree of warmth. That their health in no way suffers from their exposure is evident by their appearance alone; indeed, they of all the numerous objects who solicit our charity, are as a class the very one who least deserve it, for not one among them is not well able to earn his own livelihood by manual labour. Is it that by long habit of exposing their bodies thus to the elements, they become the better able to resist the great alterations that in this part of the world take place in the temperature and other conditions of the atmosphere? No doubt this must be so in a great measure, for what lends probability to the supposition is, that many races of men who use what we would consider very scant clothing, are nevertheless strong and healthy. Indeed, our own ancestors once upon a time were not overburthened with drapery, and yet I question if the ladies of old, who tattooed their bodies, and but very partially covered themselves by skins of animals, were not quite as healthy as their successors of the present day, who are partial to aqua d'oro and crinoline.

A curious confirmation of this belief lately came under my notice in the 'Atheneum,'* where a writer, discussing the probable causes of the decrease among the inhabitants of New Zealand during late years, thus expresses himself:

"It is not a little curious that the Maori attribute their decadence in some measure to the introduction among them of new food and clothing, and the attendant change of habits. They affirm that in former times, when their custom was to walk abroad with little clothing, and to pursue their ordinary occupations in a state of almost nudity, their skins thickened, and became insensible to the effects of cold or heat." And so it may be with the almost nude beggars of this part of China, else we can hardly account for the strong muscular appearance they all have.

A curious notice of a similar class of beggars appears in the work on 'Vagabonds and Beggars,' of which no less a person than Martin Luther is the author, and of which the date is 1528. By it we learn that the system of beggars soliciting charity while purposely exposing themselves in a state of semi-

* Of October 13th, 1860.

nudity to the cold is of very old date, and not confined to China, for we are informed that "those woe-begone gentry of the streets who, upon the arrival of *winter*, are accustomed to discard most of their garments, and stand shivering in the public thoroughfares, would doubtless, but for the modest regulations of the new police, appear as *their predecessors* of old the *Schwanfelders* did, entirely naked."

Another class of beggars remind us, by their self-inflicted punishment, of the class once known in Europe as flagellants, although in China there is this difference to be noted, that religious motives have nothing to do with this "mortification of the flesh." On a cold day in January a man of the denomination alluded to was met on the street squatting on the cold ground. He was shouting to the bystanders and passengers at the top of a very stentorian voice, every few minutes inflicting heavy blows upon his naked chest by means of a couple of flat boards, which he held together in his hand. There was, no doubt, a good deal of deception in all this, inasmuch as the sound produced was much out of proportion to the severity of the blow inflicted, although that was by no means trifling. Shortly afterwards I met another beggar, who pursued something of the same means for extorting charity. He, however, inflicted his blows, not with pieces of wood, but with a heavy brickbat. There was in his case no question whatever of the severity of the blow inflicted, inasmuch as the appearance of the chest indicated the effects of the successive blows inflicted upon it; a visible enlargement was evident at the spot over the most prominent part of the left side of it that had been accustomed to receive the blows, a spontaneous thickening of the parts having taken place, of a nature similar to that observable upon the shoulders of palanquin bearers in India and ordinary coolies in China.

The number of persons who live by begging in Tein-tsin was enormous; by our computation they amount to seven thousand. Many of them suffer from blindness; indeed, not only here, but throughout other parts of China that I have visited, it has been observed that a very large proportion of the lower orders are more or less severely affected with disease of the eyes.

As already stated, it has been asserted that parents by no means unfrequently blind their children intentionally, and there

is every reason to believe that such is actually the case to a very considerable extent; but even this horrible system would only account for a portion of those whom we met with totally blind. Purulent ophthalmia prevails here to a fearful extent, being disseminated no doubt in part by the extremely filthy habits of the people, who crowd together in small, badly-ventilated houses, seldom change their clothes, and almost, if not quite, as seldom apply water to their persons at least, this is the case among the lowest orders.

Smallpox is also very prevalent, making terrible devastation among eyes, and leaving scars that are horrible to look at upon the faces of its subjects. As elsewhere stated, vaccination is not practised by the Chinese, but in its stead inoculation. The consequence is that the scourge smallpox is disseminated by art, in addition to the periodical visits it makes in an epidemic form. But these are not all the circumstances that aid in the production of blindess among the people in the north of China. A favorite method of treating diseases affecting the eyes consists in scraping the inner surface of the eyelid, which process is performed by a class of men who make this branch of native surgery their particular province. The result of the operation is that the eyelid becomes inverted, so as to bring the eyelashes in contact with the point of the eyeball itself; disease is thus induced, and after a short time the power of sight becomes destroyed.

Towards the latter part of January I visited one of the wretched huts in which beggars lodge. The temperature of the air had during the preceding night descended to 14° Fahr.; at 9 a.m. it was only 21·5. The building in which the beggars was assembled, measured in the interior ten feet, plus ten feet, plus twenty feet. Thirty-five men, in a state of absolute nudity, were in this wretched apartment huddled together for the purpose of natural warmth, the cubic space allotted to each being just fifty-seven feet. What would sanitary reformers say to that?

The atmosphere was so abominably foul as to be extremely sickening to us, nor were we able to remain within the door for a longer time than a few seconds. The inmates, however, were for the most part strong and robust, and looked the picture of health. How long they had remained in their present den, or

whence had they come, we were unable to ascertain. One circumstance only in regard to them was explained to us. It was, that the amount paid for lodging in this horrible establishment is five cash per day. One thousand cash are equivalent to a dollar, thus the extreme smallness of the charge is made apparent; but in comparison to it, the very lowest of the low of the London beggar lodging-houses must be palaces.

It is said that in China it is a matter of the utmost difficulty, if indeed it be possible, for a person who has once descended, whether through vice or misfortune, to the position of a beggar, to raise himself from it again. Labour, however, is so abundant, and the cost of living so little, that unless by some of the accidents to which all men are liable, such as sickness, or other misfortune, few need become reduced to begging if they choose to avoid doing so. As is the case elsewhere, so here, beggars form a kind of fraternity; they are amenable to certain heads chosen from among themselves, and voluntarily submit themselves to certain rules made applicable to their own community. As a class they are as averse to bodily labour as their representatives in Europe. It is said that when opportunities offer they are by no means indisposed to take possession by violence of money or property that would not be bestowed upon them voluntarily, and, as might be expected, they furnish a large proportion of the criminal classes.

In no part of the world that I have seen do people appear to have less idea of the value of human life than in China. As for beggars, they are looked upon as excrescences upon society, and, consequently, the faster they die, the better pleased does society seem to be.

Gambling seems in China to be a recognised "institution;" at Tein-tsin gambling sticks are part of the establishment of itinerant confectioners and cooks. Customers, whether they be men or boys, do not, when they approach the savoury stall, proceed to make their purchases as they would with us. The vendor offers them, quite as a matter of course, a hollow joint of a stout bamboo, in which a number of long, thin slips of the same material, variously marked at the lower end with dots, are several times jerked up. Three of these are drawn at a time, and the process repeated three separate times, a small

coin being paid down before each trial. If successful, the winner receives double the value of the amount he has paid; but if the gambler fail, he coolly turns upon his heel and walks off to resume his employment; nor does he repeat his visit to the stall, however hungry he may be, until the next regular hour for his meal. In fact, he takes his ill success as a matter of course, and resigns himself to circumstances over which he believes he has no control.

In one of the main streets there is a triumphal arch that deserves a word of mention. It is built of wood; the side pillars and its capital ornamented with the usual Chinese representations of human and animal monstrosities. It had evidently been once upon a time highly painted, and has upon it still some traces of inscriptions. These, as the arch was erected by a mandarin in honour of the chastity of his wife, may be supposed to be the remains of what was an eulogy on her individual purity; although it must be confessed it casts, by implication at least, some little doubts upon the virtue of celestial ladies in general, when one in whom it is found is deemed on that account deserving of a triumphal arch.

It was with not a little surprise that I one day came suddenly upon a representation of Punch and Judy being exhibited in Tein-tsin. There was the same squeaky voice that is so familiar to our ears at home; there were the same ridiculous gestures; the same kind of cottage scene as at home, only here the "director" had neither drum nor Pandean pipes, like his western imitators. We were unable to follow the precise scene being represented, but we could not help asking ourselves, has this most popular street exhibition been imported from Europe into China, or from China into Europe? In all probability the latter has been the case, for the Chinese are not usually ready to adopt "barbarian" customs or barbarian amusements.

A matter of considerably more consequence than this or any of the others already mentioned, in which the English have been anticipated by many years by the Chinese, and of which evidences are now palpable to any person who will take the trouble to visit this part of the empire, is that of guns, the principle of which would seem to have been discovered in England but the other day.

In walking through one of the villages on the immediate bank of the river, near where the ground for a settlement has been allotted, I had an opportunity of seeing a couple of swivel guns, evidently breech-loaders, and said to be not less than five hundred years old, so that Sir William Armstrong has been anticipated by a very long way by the celestials. Similar guns, we were informed, are still used on board many of the junks that navigate the sea and canals in the north of China, and some have been figured and described in the 'Illustrated London News.' One of those that I saw was measured at the time: the bore at the muzzle was an inch and a half in diameter; the barrel six feet long; several hoops of metal surrounded it for the purpose of giving it strength; the swivel upon which the gun was intended to revolve was perfectly entire. The space at the breech intended for loading was about fifteen inches in length; the covering piece was deficient, but from the presence of two openings, one at either side of the barrel at this part, it was evident that the covering piece had been secured by a cross bar run through these, and then secured by other projecting pieces, each of which forms a catch; at the front of the above opening it was equally evident, from the manner in which the entrance to the barrel was bevelled inwards, that the breech-piece could readily be slipped underneath and there secured.

In a narrative such as the present, in which I endeavour to convey to the reader some of the characteristics of a little-known Chinese city and its inhabitants, I cannot avoid giving a few particulars regarding the only professor of the medical art with whom during my residence in Tein-tsin I was fortunate enough to meet.

At a retiring and comparatively quiet corner of the principal business street, this professor of the healing art has taken up his quarters. These quarters consist of an awning of blue cotton cloth, with white borders, upon which, in Chinese characters, are described at length the wonderful accomplishments of the presiding genius. The awning is extended upon four upright poles, so that secrecy cannot be observed here; not that this signifies much, for the Chinese are not naturally a modest race, and an artificial civilisation has not done a great deal to render them so, even to external appearances, as it is said to be the

case in some western nations. The patient, accordingly, boldly walks up to the physician here, for none who are so ill as to be unable to walk ever seem to ask for medical advice. Here he relates his various ailments, and it may be some of the idlers who are to be met with upon the streets, close in to listen to his recital of bodily ills. There is equally little mystery about the examination by the Chinese Æsculapius, or about his prescription. A number of small phials filled with gilded pills, some pieces of a black-coloured plaster, and any number of old decayed stumps of teeth, are strewn about upon the table.

There is, however, a popular remedy to which the people themselves have often recourse without making application to any member of *the profession*. Thus, during the hot season I had often occasion to remark that great numbers of the natives bear upon their necks and upper parts of the body a succession of small patches of bluish colour. These we soon ascertained to be produced by pinching the skin; we moreover learned that this is considered to be the orthodox method of treating the headache, to which they seem to be very liable at the accession of the intense heat of the summer months; and the people themselves entertain a belief that in proportion to the number and distinctness of these marks, so is their efficiency as a remedy.

Not only are the Chinese as a people particularly partial to theatrical performances, but they are not less so to the exhibitions of conjurers and jugglers, many of whom traverse the country and larger towns. I have seen some of them, and have been struck with wonder at the proficiency of the performers in their wonderful art, as well as with the novelty of some of their performances.

I can only give particulars of a few of these performances, in consequence of my having unfortunately not taken full notes of the whole on the various occasions I have had an opportunity of observing them; but I may mention that they always take place in the open air, the performer having nothing in the shape of chair or table supplied to him. If he requires to place any of his apparatus on a stand, he manufactures it from the various odds and ends in his possession, and thus obtains an advantage he would not have if provided with these things

merely at the time. I will give a short account of a few performances in succession.

1st. The conjurer took a small ball in the palm of one hand. After various manipulations he placed it upon the crown of the head, the hand flat over it; with the other hand he struck smartly that over the head, and at the very instant he did so the pellet seemed to fall from the mouth, making a distinct "thud" as it fell, then rolling along the ground.

2nd. He took a double piece of thick string; one of the "audience" divided it with a knife. Holding the divided ends in his fingers, the conjurer gave each of the other to a bystander. He pretended to perform some incantation over the divided part, then passed his wand across it, let go his hold, and the string was reunited!

3rd. Taking what seemed to be a small piece of wood, no larger than a lucifer-match, he inserted one end of it into a nostril; with a piece of wood which he used as a mallet he pretended to drive it in, the blows as they fell being distinctly heard; at last it disappeared, apparently, up the nostril. After some manipulation the piece of wood was withdrawn, although not from the nostril by which it had been made to enter, but through the opposite one. He immediately afterwards drew a piece of wood, precisely like the original, from the nostril into which it had at first been put, then again from the other nostril, and so on alternately for a considerable time. But this was not all; turning down the lower eyelid, a similar piece of wood seemed as if it projected from the outer angle of the eye, and were pointing towards the nose, and thus between eyes and nose, I counted ten pieces extracted instead of the one that had been first introduced.

4th. He took a number of needles and placed them one by one into his mouth; he then seemed to swallow a hollow brass ball of about an inch in diameter, and having in its interior a rattle. Walking round the circle which his audience formed, and shaking himself, the sound of this rattle seemed as if it proceeded from his chest. After going through several contortions that were more expressive than elegant, a piece of thread was ejected from the mouth; laying hold of it, he slowly unravelled it, pulling it straight out as he did so, and there-

upon, at intervals of six or eight inches, were the needles *threaded.*

5th. Laying a cloth upon the ground, and sitting cross-legged, he placed before him three empty bowls, and having done so, he then placed between himself and each of these bowls a substance which in shape and appearance had the general look of an olive. After various manipulations, he turned the bowls in succession mouth downwards, the fruit being still before him. Taking one of the seeming olives in his finger and thumb, he blew upon it, then turning the palm of the hand which held it downwards, he struck its back with the wand he held in his other hand, and as he did so the fruit was gone. He next went through the same process with the two remaining olives in succession, but meantime did not seem to touch either of the bowls; with the wand, which he continued to hold, he turned over into its proper position each of the bowls in succession, and there, underneath each, was its appropriate piece of fruit.

6th. He having taken three conical hats, such as are in common use by the Chinese, he placed them at different parts of his circle. Under one he placed the feathered pinion of a sand grouse, under a second what seemed to be some other portion of the skin of the same bird, and under the third what seemed to be the tail of some other bird. He then took a common rug, shook it before us, turned it round in every direction, apparently that we might convince ourselves that it was nothing but a rug. He now proceeded to manipulate this rug over each of the hats in turn, and threw away the particular object that had been at first placed under them. He again shook the rug, turned round first in one way, then in another, and finally stamped upon it. He then proceeded with it first to one hat and then to another, manipulating it over each in turn, and leaving the rug over the last. He now raised the first two hats, and from underneath each came a pigeon, hopping and skipping along, and looking at one another in astonishment as they thus met. The rug was now removed from the last, and there were, in addition to the hat, three plates, each of which contained pieces of fruit, and a larger dish, having upon it a pile of fruit; once more he returned with the rug, shaking it as he proceeded to one of the hats from

which the pigeon had just escaped. Again he turned the hat mouth downwards, covered it with the cloth, went through the same manipulations as before, and then pulled out from under it a basin filled with water.

All these performances took place in the open street; but, as a matter of course, I am unable to explain any of them.

On another occasion I had an opportunity of witnessing some performances of the same kind as have now been described, and at the same time some of the same style of performances which we are accustomed to see in England. The performer had a leather cup secured upon his forehead by a series of tapes or bandages, although not of a surgical nature. He kept throwing into the air, to a height of several yards, first one, and then another of two large balls, catching each as it fell in the cup upon the forehead, picking it out with the hand, and throwing it again in the air while he placed himself in a position proper to receive the one about to fall.

Some of the better classes of shops in the suburbs are filled with silks and various kinds of cloth of native manufacture; some with furs of various kinds and qualities; others with crockery jars, enamels, and various kinds of "curios," as curiosities have come to be called here. Cracked china, enamels, and jars, sell for most exorbitant prices. We had not been long at Tein-tsin before the prices of articles of these descriptions had run up so high, that £50 and £60 were often asked for an enamel vase, the utmost value of which was about £5. Even at these exorbitant rates, however, they were purchased up, thus illustrating the ancient proverb regarding the class of people who most readily part with their money.

In reference to enamels, it may not be out of place here to observe, that having had on one occasion an opportunity of examining some of the best kinds of enamel that were to be found in Tein-tsin, and having admired not only the elegant patterns, but also the bright colours of the enamel itself, one of the gentlemen present gave us an account of the process by which it is prepared. It appears from his account, that in the process of manufacture, the design is, in the first instance, carved into the metal of which the vase consists; a mixture of pulverized glass, intermixed with oxide of lead, of tin, or cobalt,

together with salt of tartar, is then introduced into the crevices thus made, the substance being distributed artistically, according to the pattern which it is intended to develope. The whole is then put into an oven of regulated temperature, and is then baked. The colours are said not to be very distinct at first, but to become more and more so by age. Hence the great value of vases of one or two hundred years of age and upwards, as compared with those of recent manufacture.

Some of the articles sold in shops of the above description are remarkable for the peculiar ingenuity displayed in their manufacture. One of the most remarkable in this respect that I saw was a small scent-bottle made from crystal; the mouth was scarcely larger than a goose quill, and yet a landscape was painted with great neatness upon the interior of the bottle. In the same shop I also saw a porcelain vase of a very elegant pattern, but with the peculiarity that the upper portion of it revolved upon the lower. It is difficult to understand the processes by which either of these articles was manufactured.

Being naturally anxious to visit an opium smoking shop, I took an early opportunity of gratifying my wishes in this respect. The establishment was readily recognised by the initiated by its simple sign, which consisted merely of a few lozenge-shaped, or round pieces of brown paper pasted upon the door or wall—for the shapes of the paper and the part upon which they were pasted varied in different establishments. As we entered, four men, who sat at a table playing at cards for cash, politely saluted us, making at the same time a movement as if to rise. Two others were reclining upon a cang; the face of one of them was flushed; his eyes were red. Between the two men lay the opium pipe, the opium ready prepared and placed in a cockle-shell, and the lamp ready lighted. The apartment was not more than twelve feet square in size, and these six persons, together with two attendants, constituted its occupants.

At a little distance from Tein-tsin, on the road to Pekin, is a dirty and crowded village; no fewer than three opium shops were now found in it, although at the time when the force advanced through it, *en route* for Pekin, no establishment of the kind was found. Here, then, we have one of the first fruits of the port of Tein-tsin being opened to foreign shipping. These

three shops have been opened for the consumption of "drug," which was introduced by the first vessel that arrived under the treaty.

On another occasion I entered a shop of this description. In the apartment dedicated to smoking, a man lay upon a cang, dead asleep, under the influence of the narcotic; a second, whose head was already placed upon the pillow of bamboo wicker work, employed himself in moistening a lump of opium, apparently about a scruple in weight, holding it while he did so over the flame of the lamp. Having thus prepared it apparently to his satisfaction; a portion was placed in the aperture of the bowl of the smoking-pipe, and then, being held close to the flame of the small lamp that stood convenient for the purpose, he deeply inhaled the fumes, permitting them to escape through his nostrils, after they had been retained within his lungs for a few seconds. The first morsel being thus speedily disposed of, he proceeded to manipulate another as he had done the former; but during the few minutes we stood by, his eyes had already become bloodshot and heavy under the effects of his first smoke.

It is not my object to enter into a discussion upon the many evils attributed to opium-smoking, my chief object in these pages being to convey to the reader as correct an impression as I am able of facts and circumstances that came under my personal cognizance; suffice it, then, to say, that I have witnessed much wretchedness and want among the victims of this vice; but neither in a greater degree, nor among so large a proportion of the people, as are similarly debased in the United Kingdom, through the evil consequences of indulgence in spirits.

It appears that the manufacture of opium is now in progress in the Shen-si province, the borders of which are not far distant from that of Pe-cheli. Some opium prepared there has already appeared in the market, and although undoubtedly very inferior in quality to that imported from India, is said to be proportionably cheap, and therefore likely at no distant period to seriously interfere with the revenue obtained in India from the cultivation of the poppy.

There are several native establishments in Tein-tsin, which are more or less to that part of China what Fortnum and Mason's is to England, or indeed to the whole British empire.

The principal shop of this description here is situated in North Street, and was well worthy of a visit. Like all shops in this part of China, its entire front being removed during the day, its interior is thus made to communicate directly with the street. Its floor is covered with a succession of baskets, jars, and porcelain vessels; a couple of counters divide it, and around its three walls are shelves, upon which rest all the most esteemed kinds of native delicacies. Suspended from the ceiling is a stuffed sturgeon, highly varnished, and still more highly coloured artificially with vermilion, yellow, and bright blue colours; from the nostrils of the creature two wires extend to a length of a couple of feet, and support at their extremities a ball, each of bright red floss silk; and as they agitate in the breeze that freely enters the open space, they wave backwards and forwards in imitation of the antennæ of butterflies, or of similar appendages with which the representations of "the dragon" are ornamented.

Fins of sharks of all sizes, and dry as board, hang from the ceiling and occupy shelves—various other preparations, the precise nature of which it is impossible to divine, hang also pendant from the roof; of these the more valued are preserved in wicker-work, the less valuable being put up in paper.

Dried fish of various kinds—some, if we might judge from their appearance, decidedly good—formed a great proportion of the contents of the shop, and occupied a great part of the shelves. A stand for sesamum oil was at one end of the shop; piled above each other along the wall were a kind of large earthen vessels with large mouths hermetically sealed by means apparently of a composition like putty: these contained a particular kind of spirit which is brought from the valley of the Jang-tse, and is held by the people in high esteem. In large jars on the ground are pickled sounds of fish; and heaped up on the tops of others are salted *turnips*, the tubers being slit up for the more ready reception of the brine, and the tops twisted about into a knot. Near these are a series of jars containing a strange-looking blackish mass with a heavy, sweet odour; what its precise nature is we cannot learn; to us it looks dirty and offensive, but seems to be much prized by the people for whose use it is intended.

On one of the counters are a series of preserved fruits and other materials. Among these we recognise ginger; a very pale jelly, which forms one of the number is, as we are informed, prepared from sea-weed,* various kinds of which are about the floor, heaped up in large baskets, and perfectly dry; long strips of what appears to be dried gelatine occupying others. Another delicacy we at once recognise; it is the bright red jelly of the "Siberian crab," or more properly of the fruit of *Cratægus layii*, which is itself common in the market, the agreeable subacid flavour of the jelly commending it to foreigners, at whose tables it is often seen. Dried cuttle fish put up in bundles, pickled shell fish, that is molluscæ, dried shrimps, and dried sea slugs, or Holothuria, make up the greater part of the other delicacies, at least so far as we could recognise them; unless, indeed, we include a particular kind of small, transparent fish, which seemed to be held in great favour, and was in general appearance somewhat like a miniature "Bombay duck."

Some other delicacies only we were able to recognise. Sugar, white, but with very fine grain, a kind of curd-looking jelly, prepared from bean flour and arrowroot, extracted from the root of the Nelumbrium, were the principal of these. There were very many, however, of whose nature it was not in our power to form an opinion; yet what we saw repaid a visit to the establishment, where we met with nothing but politeness from the occupants of it.

Among the many objects of one kind or another illustrative of the manners and customs of the most interesting people—among whom I now was—that I visited, the edifices connected with the peculiar religions that they possess were certainly not the least in interest.

The Chinese, in the names they give to their various temples, seem to take an especial delight in selecting those of the most pompous kind that can be devised; and they moreover apply the term temple to buildings which have no connection with even the slight substitute for religion which prevails among these people. Thus, an examination hall they dignify with the name of Temple of Fame. Then of religious edifices, we have the

* The fucus called *Gigartina tenax* furnishes, when boiled, a jelly used for making lanterns, as also for varnish, and for food: May this be it?

Temple of Confucius, the Temple of Future Punishments, the Devil's Temple, the Dragon Temple, the Temple of Oceanic Influences, and so on.

There is no very material difference in the general aspect of the greater number of these; all consist of a greater or less number of small buildings within one general enclosure; these individual buildings being devoted to figures and images of different sorts and sizes. I regret, however, to have to say that by all accounts the monks who preside at these shrines are not always eminently famous for the spotless purity of their lives; nor, if we may believe report, are their temples dedicated solely to the worship of figures made of inanimate clay.

A brief notice of one or two of these temples will be sufficient to convey an idea of the general style of the whole. That known among the Chinese themselves, under the native synonyme for the "Temple of Oceanic Influences," is the one in which the treaty of 1858 was signed, and from this circumstance is now called simply the Treaty joss house. It is situated outside the city, upon the open plain which, as already stated, separates the wall from the line of intrenchments built for the purpose of defying the foreigners. In early summer it became necessary to occupy it as quarters for the troops, in order that, as the hot season approached, they might be less crowded together than they had been throughout the winter; and in order to fit it up as barracks, many of the figures it had contained were removed. The principal shrine remained, however, and here the principal figure was a representation of Budha surmounted by a canopy, half obscured by a thin silk curtain which hung across the front, and surrounded by a series of smaller figures, which probably represented deities of minor importance. Around the walls of the apartment stood in various attitudes "celestial" deities, each of whom had an expression different from his companions—some being gentle and philanthropic, others the reverse. Banners, standards, gongs, bells, and drums were variously suspended from the roof, and placed at intervals; incense sticks, and candlesticks stood upon a raised altar, which would have looked like what we are accustomed to see in a Roman Catholic church, were it not that in the centre stood the Confucius tablet. The whole

was enveloped in a dim, religious light, occasioned by the windows here, as everywhere else in the north of China, consisting of semi-transparent and very dirty paper.

A totally different style of temple was that of Horrors, containing as it did representations of the Buddhistic notion of the punishments which the wicked suffer in a future state. The temple itself is situated near the north-western angle of the city, and immediately adjoining the walls. It consists of a series of scattered buildings, the whole being surrounded by a wall, having a huge gate in front, at either side of which is a collossal figure carved in stone, intended to represent dogs, but which, from the grotesque exaggeration of their features, are complete monstrosities.

Entering the general enclosure, I found each of the buildings within it was occupied by different series of clay figures, all of which were of excellent workmanship, and evidently Buddhistic in character. In one apartment there were representations of the judgment and future state; and some of these were of so strange a character, that I am inclined to think a few details regarding them may not be uninteresting.

At one end of a room stood a representation of a furnace, the flames being partly represented by the arrangement of clay in alto-relievo, and partly by the aid of painting; various portions of limbs were represented in these flames, as also an entire body appeared as if it had been newly thrown in by a demon, who stood in artistic attitude in front, as much as to say "I alone have done it." Upon the top of the furnace two other demons were represented as if in the act of revolving a horizontal wheel; and from the centre of this wheel rose spirally what was in reality wire painted black, but which, by a little ingenuity was made to appear to expand into a painted scroll upon the wall. On this scroll were representations of various creatures, thus indicating clearly that the whole was intended to illustrate the theory of transmigration of souls.

I at the time noted a few of the figures represented upon this scroll. Among them were griffins and dragons, mandarins, and some lower orders of people, old as well as young; horses, bullocks, deer, donkeys, crane, a common fowl, a scorpion, a

snake, a tortoise, a turbinated shell. Fish of various kinds, crabs, butterfly, dragonfly, beetle, and mantis.

In another apartment was what reminded me of the vision of Mirza. A bridge spanned a rapid torrent, down which were swept the bodies of the lost, and, as if to increase the horrors of their situation, some were represented as entwined by a snake. The bridge itself was of elegant shape, consisting of one large centre arch, and a smaller one at either end of it. It was, moreover, of comparatively great height; in this respect similar to those seen upon plates of the old willow pattern, and generally met with in Scotland up to a comparatively late period. One poor, thin, emaciated fellow was showing most valiant fight against a demon, who stood upon one end of this bridge contending the passage against all comers; and descending upon the opposite end, having upon their faces an expression of beatitude, were several who had, either by mediation of a friend or by their own merits, obtained the right to pass.

In the same apartment that contained these representations were three others that especially attracted my attention; the first of these was the figure of a cross upon which a victim appeared as if in the act of being tied; the second of these objects was the figure of the sacred bullock, but without the hump of the "Brahminee;" and the third was a hook which was suspended from the roof, and upon which was impaled through the back a human figure.

The signification of these was at the time only in part apparent, but became more so soon afterwards, when I had begun to trace the connection of the religions of China with those that had their origin in the West; thus the cross was evidently traceable to that blessed religion under which arts, science, and civilisation have attained their present highest state of perfection. The bullock without the hump indicates a connection with the superstitious rites of Isis and Osiris as practised thousands of years ago in Egypt; and the third represents the horrible rite of "Chakkur puja" still, or until very lately practised by Hindoos in India. Other figures represented the infliction upon women of various kinds of tortures or punishments; some of them of so horrible a nature that they are better not described. Some of them, neatly dressed, and with the small feet of the

country, were being treated by man-devils in a highly ungallant and cruel manner. There were no feminine demons, which no doubt says much for the good taste of the celestials. Female forms were represented as being sawn asunder, pounded in mills, thrown into cauldrons, in which skulls, feet, hands, and cross-bones seemed to float about; abdomens were cut open after the most approved Sepoy manner, and, as a climax to the whole, some were represented as being thrown wholesale over a precipice, as the Christians formerly were from Pappenberg by the Japanese; only with this little difference, that here they seemed to be impaled as they fell upon spikes placed for this malevolent purpose. In all this I saw nothing to lead me to think that women were permitted to enjoy the privilege of transmigration after death; all their punishments were represented as being inflicted upon their own proper and individual bodies. Probably the Chinese, together with some other eastern nations, deny to woman the possession of a soul.

On one occasion, during the cold of winter, I took a long walk through the suburbs on the French side of the river, and up along the left bank of the river Peiho. In our way I came to a very old Buddhist temple, which my companion and myself determined to enter. No sooner had we passed through the outer gate than we were amazed to see the four officiating priests come rapidly towards us; they approached us with great civility and freedom, bowing to us, shaking their own hands *to us* after the native custom, smiling and talking as we preceded. Opening a door of one of the buildings, they invited us to enter, and as we did so, we found it was their dwelling-house into which we had been escorted. The apartment in which we now were was large, and contained but little furniture; it had a floor made of brick, and like other houses in this part of China, its windows were formed of paper; a few chairs and tables formed its entire furniture, one of the latter being devoted to books. At one end of the room stood a cang or raised brick wall, which here combines the double purposes of couch and bed, having a flue running backwards and forwards through it, and a small fireplace at one point, so as the more readily to diffuse heat through it during dreary winter. In the centre of the room stood a stove, and upon this, as we entered the apartment, one of our

hospitable newly-made clerical friends placed a kettle. It contained tea, which having been quickly heated, we were invited to partake of. We had not an opportunity of declining the proffered hospitality now, had we been inclined so to do. No sooner had the tea been heated, than one priest hurried himself to place cups before us; a second poured out a pale infusion; and a third, opening a large cupboard, brought us a few small loaves of steamed bread.

I will not be so ungracious towards our entertainers as a recent popular writer has proved himself towards the poor but hospitable cottagers of the highlands of Scotland. Having accepted their hospitality, I will not abuse their homely fare, nor ridicule the spirit of good-heartedness in which it was offered. The fare offered to us by the Buddhist priests had this great recommendation, that it was the best it was in their power to give; and if this tea could not be said to have been according to our ideas all that was desirable, the bread was infinitely superior to what was provided for our troops by our commissariat. My companion and myself having entered into conversation regarding our agreeable adventure, we were amazed to see our entertainers sit and stare at us in mute astonishment. They subsequently showed us over their temple, which contained the usual number of images and figures, the principal shrine being occupied by representations of Buddha in his three manifestations, namely, the past, the present, and the future. Many other images were placed in different portions of the temple; and in front of the principal a joss stick buried. The priests laughed and talked as usual when in presence of their "gods," and in a manner that gave us but a poor impression of the veneration they entertain for these figures. Among the Buddhists, as among their western representatives, the Roman Catholics, there are monasteries and nunneries. Having thus given a brief account of a visit to the former, I will add a few remarks in regard to the latter.

During the hot season it became necessary for us to increase still further the accommodation provided for the troops. A nunnery was accordingly solicited as one of the buildings to be fitted up for this purpose. In visiting it with the engineer officers, I had the pleasure of seeing two of these Buddhist

devotees; their heads were closely shaved; they were dressed precisely like men, and what was perhaps no less remarkable in this part of China was that their feet were natural in size and shape. They wore the same description of stockings and shoes that are commonly used by men, and in their general appearance so strongly represented the higher sex that my friend, whom I accompanied, had on a former occasion committed the grave error of mistaking the nuns for monks.

Their temple only differed from others that we had seen by containing several figures of female deities; and we observed that the one in their own dwelling was one from the Hindoo mythology, having no fewer than forty-six arms. One of the nuns looked particularly smart, and were we to judge from her manner alone, did not give us the impression of being a person who would from choice retire from the world. The other, however, was demure and sour, her features bearing the lack impression of persons who, forsaking sublunary things, devote themselves to contemplation and chastity.

We were not prepared to find so large a population of Mahomedans as really exists in Tein-tsin. That a trade existed between Arabia and China so early as the sixth century is well authenticated, and we know that the Chinese in their victories towards the north-west boundaries of India brought back with them from time to time many captives. Other captives were made of Mahomedan invaders of China, and the descendants of these constitute the present followers of "the prophet" who are interspersed throughout the empire, and form a considerable portion of the population of Tein-tsin. Unlike some other sects that might be named, they do not, when in a foreign land, ignore in public the religion which they profess. On the contrary, each Mahomedan and family boldly declare to all the world the fact that they are Mahomedans. The Chinese written character signifying that they belong to the people who are not eaters of pork is placed prominently upon the large lamp which everywhere here is suspended over the door; thus at night as well as by day, all the world may know, if they take the trouble to use their eyes, that the inmates of these houses are Moslems. On one occasion I visited the principal mosque of this sect. It is situated in the western suburbs of the city, and in external

style is more or less Chinese. It is altogether devoid of the minarets and domes that distinguish similar temples elsewhere, its ornaments being almost perfectly Chinese in their general appearance; internally, however, it has all the characters of Mahomedan mosques elsewhere. Inscriptions in Arabic decorated the walls; priests squatted upon a mat-covered floor, enwrapt, as it were, in the study of the Koran, which volume was printed in Arabic, a language that these men, when requested to read, did so fluently. The mosque was so built as that the worshippers, while performing their devotions, faced towards the west; but a matter which created no little surprise, was the fact that in the temple of a sect so strict, bigoted, and fanatical as Mahomedans notoriously are, they should nevertheless find themselves compelled to permit the existence within its walls of the ordinary symbols of the more purely Chinese religion. A shrine upon which stood the tablet of Confucius, and around which was wreathed in bold relief the Taoist dragon, stood almost in the very centre of the Mahomedan temple. From the priests here we learned that the number of Mahomedans in this one city is about ten thousand, and that scattered about among its streets are three temples, although none of them so large as the one to which we obtained admittance. The general appearance of the priests and people generally to whom this temple belonged did not differ from that of the ordinary Chinese; their features had all the characters that usually distinguish the natives of this part of China; like them also the Mahomedans wore tails; the greater number used no covering for the head, but the officiating priests and some of the people who happened to be in it at the time of our visit wore a conical cap of a blue colour, which is evidently a remnant of the dress worn by their forefathers in Arabia, Persia, and India.

One of the most interesting public institutions in Tein-tsin that I had an opportunity of visiting was the Foundling Hospital, to which, by the courtesy of Mr. Mongan, acting consul, I obtained admission. This building is situated in the suburbs of the city, near the eastern gate. It is apparently strong and substantial, without ornament, save the figures of dogs carved in stone, one of which is placed at either side of the stone steps leading to the entrance door. Above the door is placed a tablet,

bearing upon it an inscription in Chinese, which being translated intimates that here is "The Hall for Cherishing Children." Entering under this tablet, we passed along a passage and across a court-yard; and having done so, were met by some of the people connected with the establishment who, recognising the consul, at once offered to conduct us over the entire place. There seemed at the time of our visit to have been about twenty children, together with their nurses, accommodated in each of these enclosures; the total number of foundlings in the establishment being about eighty; and it may be observed that so general in this part of China is the fashion of compressing the feet, that those of the unfortunate female inmates of this establishment were being subjected to this process. There is no separate portion of the building appropriated as an hospital for sick; the children are attended by native physicians in their own dormitories or court-yards. One division, however, is appropriated to a class of children and grown people whose melancholy condition is calculated to command the pity of all visitors. Here the inmates were composed of the blind, the deaf, the dumb, and the idiotic of both sexes, together with their attendants; and here we were informed that while, as a general rule, the other children are not retained after they have attained the age of fourteen years, the unhappy creatures for whose use this particular portion is devoted, are retained for life if necessary. Returning from visiting this part of the establishment, we met the superintendent, who politely invited us to his own quarters. Over the door of what seemed to be the hall of reception, was a tablet similar to that already mentioned, as being over the outer doorway; the characters upon it signifying, as translated by Mr. Mongan, "We sincerely beseech thee to rescue the naked." Arranged upon tablets on either side of the hall were the code of regulations of the establishment, and lists of the principal benefactors and contributors to its funds; these reminding us of what we were accustomed to see in charitable institutions at home. Having entered the apartments of the superintendent who had the rank of a brass button mandarin, and a friendly good-humoured man to boot, we were invited by him to sit down; and according to Chinese custom, had tea served up so soon as we had taken our seats. The room in

which we were was decorated with scrolls upon the wall, on each of which one or more moral sentiments were inscribed; of these, two only were translated to us, and their meaning seemed to be somewhat obscure. The characters upon one of these signified, when interpreted into English, that "To look at the image of clouds reflected from the ocean is dazzling to the eyes." The other, when similarly interpreted, signified that "He who observes the forest upon the mountain side, learns what is the nature of man"—a sentiment, the meaning of which is by no means evident, unless indeed it be identical with that expressed in other terms by Sir John Davis in his valuable work* on China, namely: that "By studying in the retirement of mountains and waterfalls, man *returns* to the primitive goodness of nature"—a sentiment, the truth of which is little known by the many who pass their years amidst the torment and contention of city or public life.

The furniture of the apartment was neat, and displayed considerable taste; several flower-pots stood upon tables, and in recesses, these containing dwarfed flowering trees of different kinds, which had, doubtless, been brought within doors for protection from the cold, for the season was winter.

From our agreeable entertainer we learnt that the foundation of the establishment dates back about seventy years, it having been erected in the fifty-ninth year of Tien Lung, grandfather of the present emperor, Hien Fung. The funds were provided partly by original endowment, partly by donations and subscriptions; of late, however, the funds would seem to have fallen into a somewhat unsatisfactory state, and the institution to be almost, if not quite, entirely supported by the charity of the salt merchants of the city.

The children brought in are, in some instances, of a class corresponding to that from whom institutions in England, similar to this one, derive their distinctive names. In other instances, infants are brought in by their parents, when the latter are too poor to maintain them, and in such instances are often claimed when the pecuniary circumstances of the father or relations become more propitious.

It usually happens that the number of applications for ad-

* Vol. ii, p. 152.

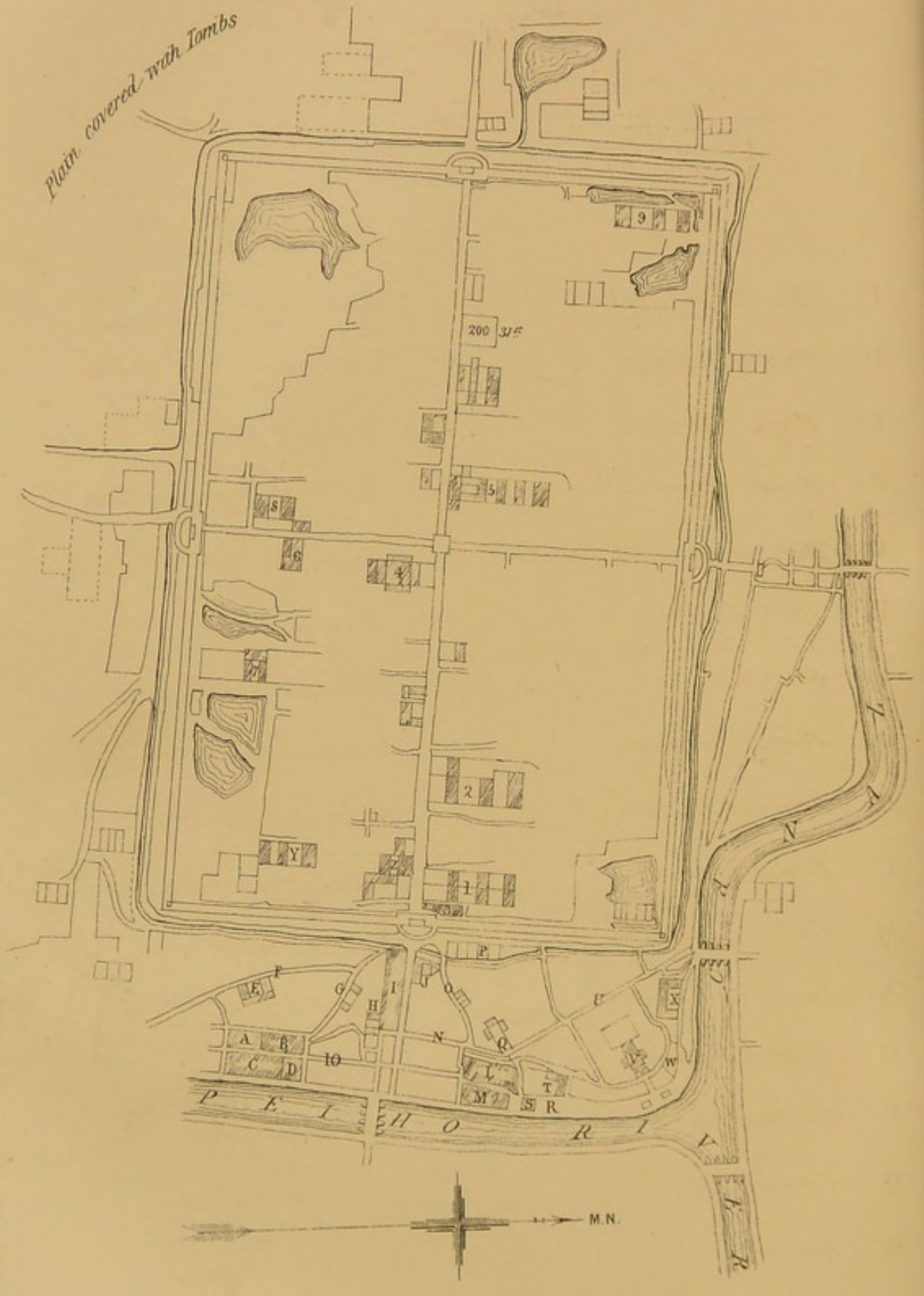
mission depend much upon the state of the harvest; thus, when the crops are abundant, and the harvest favorable, applications are few; while, under opposite circumstances, they become, as might be expected, more numerous. We were also informed that some of the children in the institution are adopted by people who have no family of their own, and it would appear that comparatively few remain in it until they attain the age of fourteen. Those who do remain so long are then sent away, the boys to learn trades—each receiving a donation of ten taels —the girls, to be married, with a dowry of fifteeen taels each, or about £5 sterling. The fact deserves to be stated, however, that the girls are always placed in a respectable position in life, never being abandoned to vice and infamy.

I have entered at some length into a description of this institution, because few people, personally unacquainted with China, would suspect the existence of such a one in that country. It is, moreover, satisfactory to state that, at the time of our visit the children within its walls looked remarkably healthy, although personal cleanliness was evidently a matter altogether beneath the notice of their attendants. There was not among them more than a fractional part of the squalling that there would be among one quarter the number of children in the United Kingdom, and the arrangement of everything connected with the place was quiet and orderly.

This is not the only charitable institution maintained by the Chinese in Tein-tsin. There is another, of a similar kind to the Foundling Hospital, supported for the reception of blind people, and another for the aged; into neither of these was I able to obtain an entrance, but I have been informed that, as compared to the Foundling Hospital, they are badly conducted. An establishment of a different kind to these was visited by me; it was found to possess an interest of its own, and to well repay its inspection; this was a native school. One day, in passing along one of the narrow streets in the outskirts of the city, my attention was attracted by the well-known hum of a juvenile school at home. As I turned to enter, I found the master standing at the outer door, taking observations, no doubt, of the passers by, and of their doings. I stopped to enter, and, as he discovered my intention, he "chin-chinned,"

bowed several times, and shook his own hands *to* me; then, opening the door of the apartment in which his pupils were assembled, he invited me to enter. The room was small, dark, and close; seated upon forms, at different tables, were about a dozen boys of about the same number of years in age; these were jabbering their lessons over well-thumbed books, the symbolical characters of which were incomprehensible to me. The young scholars did not appear to stand much in need of the "master's" help; at all events, he seemed to be evidently of that opinion, for as I, after a minute or two, left the place, he accompanied me to the door, bowed, chin-chinned, shook his own hands as before, and then took up his former position to observe the passers by.

SKETCH OF THE CITY & PART OF THE SUBURBS OF TIEN-TSIN.



Reference.

A. *Officers Quarters.*
B. *General Hospital.*
C. *Hospital Barracks.*
D. *Native Hospital.*
E. *Royal Barracks.*
F. *Royal Street.*
G. *Wall Street and Barracks.*
H. *Div.n Com.st*
I. *Stone Street.*
J. *Theatre Barracks.*
K. *Engineer Barracks.*
L. *Commissariat.*
M. *Coolie Barracks.*
N. *Pastry Cook Street.*
O. *Short Cut Street.*
P. *Devil's Temple.*
Q. *General's Stables.*
R. *Garrison Parade.*
S. *Main Guard.*
T. *Head Quarters.*
U. *High Street.*
V. *Post Office, Joss House.*
W. *Military Store.*
X. *Middle Bridge Barracks.*
Y. *Temple of Fame.*
Z. *Grotto Barracks.*
1. *Confucian Temple.*
2. *Tautais Yamun.*
3. *Head Quarters Staff.*
4. *Royal Artillery Barracks.*
5. *Mitilary Train.*
6. *Buff Barracks.*
7. *Moon Temple.*
8. *South Barracks.*
9. *Temple of Horrors.*
10. *Hospital Street.*

CHAPTER VI.

TOPOGRAPHY OF TEIN-TSIN.

Topography of Tein-tsin, with some account of agriculture and gardening in the vicinity of that town—Succession of crops—Fruits—Vegetables—Preparation of oils, &c., &c.

I PROPOSE devoting the present chapter to a rapid sketch of some points connected with agricultural operations in the north of China, introducing such remarks, at the same time, as present themselves relative to some of the natural productions and climate of that portion of the country. In order to give, as far as possible, a connected account of these, I will select from my journal such notes as I took regarding them from my arrival there onwards throughout the succeeding year.

Having landed at Taku on the 17th December, when the winter cold had fairly set in, the hard frozen earth on shore sounded strangely as I first stepped upon it. The air felt bracing and delightful; and the first impression was that throughout the succeeding months a delicious climate was before us.

Starting on the following morning for Tein-tsin, the road by which I travelled stretched along through a dreary flat tract of country, which showed indications of being during the hot season little if at all better than a swamp. The roads by which it was intersected in various directions were raised above the general level to a height of several feet, thus indicating that during certain periods of the year this part of the country is more or less inundated.

Having travelled several miles, a few slight undulations appeared in the country, although nothing that could be called

a mound or eminence—nothing more, indeed, than a trivial variation in the *dead level* that characterised the country before and on either side, as far as vision could extend. Fields bearing marks of recent cultivation gradually became more and more numerous; at first they were separated from each other by "arms" of the marsh already mentioned, but these interruptions diminished, until after riding about twelve miles along the road, it became apparent that cultivation had extended over almost every spot of the surface; here and there the face of the country was intersected by canals of irrigation; and as the frost was not yet sufficiently intense to close these up, I had an opportunity of observing the process by which the water is raised from these canals, and made available for fertilising the fields.

This was done in much the same way as in Lower Bengal. Two persons, standing upon opposite sides of the small canal, work by means of a rope in either hand, a basket, to which these are secured midway, in such a manner as that by a succession of swinging movements the basket is made to dip in the water, and being filled, to raise to the level of the field, and then, by a slight turn of the hand, or jerk, it is turned over so as to empty its contents into a place prepared for it at the border of the field, and from which by narrow drains, or "water courses," it is led to wherever it is needed; precisely as the similar process is performed in India and Egypt.

Trees were few: an occasional line of bare leafless branches at first appeared in the distance; after a little I began to pass groves of apple trees, that had evidently been planted with much regularity and care. I had tasted at Taku both apples and pears grown in this neighbourhood, and had found the former soft, but with somewhat the flavour of British fruit, the latter watery and indifferent.

Bordering the roads a few trees stood, which, although leafless, were readily recognisable as elms and willows; others appeared to be poplars, and of these descriptions of trees were those of all sizes, from that of only a few feet high to that fit for timber.

Of birds, the common European gull, which I had already seen in flocks in the Gulf of Pecheelee, now was observed

hunting over the fields in search of food. Nor was this the only familiar bird that presented itself; the crow, the jackdaw, lark, and sparrow flitted about as at home, and a woodpecker was obliged to content himself with exercising his boring propensities upon the trunk of an ancient willow—there being no "hollow beech tree" here for him to "tap." Huge flights of the pin-tailed or sand grouse (pterocles) darted with noisy and rapid flight across the now bare plain, their numbers far exceeding what furnish in India such excellent sport on the march between Soodianah and Ferozepore.

The day was piercingly cold—a high wind arose toward afternoon, blowing in gusts, and bringing up from the eastward masses of dust; the pools and water-courses along the sides of the road became covered with a thin pellicle of ice—the thermometer stood at 30° Fahr.,—the distance I had to ride was long, not much, if at all, under thirty-five miles. Cold, hungry, and fatigued, therefore, I arrived at Tein-tsin.

The country in the immediate neighbourhood of Tein-tsin is perhaps the most level that I have ever seen, the plains of India not excepted. For many miles on either side there does not appear to be an undulation a foot high. Scattered at distant intervals are a few small villages, the foundations of which are slightly raised above the surface, doubtless with a view of preventing them from being inundated during the rains that fall in early summer. A few trees of moderate size are found growing about these villages, but otherwise the country was bare; the crops, by the time that I visited it, had all been cut and housed; the vegetation had already been destroyed by the cold and the frost. The few trees that I saw were leafless, and thus the aspect of the country was as uninviting as could well be desired.

The soil is of a very rich alluvium, mixed with clay and micaceous sand, bearing all the evidence of having been deposited in still water. In some parts it is covered to a considerable extent by saline efflorescence, which is said to consist of common chloride of sodium, for the preparation of which regular "pans" are established somewhat nearer the mouth of the Peiho than Tein-tsin, and of which high stacks, well covered over by mats, are arranged in lines on the bank of the river opposite, and a little below that city.

Not a stone nor a pebble is to be found in the soil. It is said to be exceedingly rich; yielding crops readily. The country here is very much drier than it is more towards the south, as, for instance, near Shanghaie and Canton. There it is divided almost like network by canals and water-courses for irrigation. Here, however, they seem to be very few; although in the dry season, when I arrived, the dry beds of not a few were easily detected. The fields to be cultivated are generally of an oblong square form, slightly elevated above the general surface; a slight embankment is thrown up around each for the purpose of preventing the escape of the water that is thrown up into it for irrigation, from the superficial channel that is thus formed.

I stated that there are no undulations upon the surface of the country; this must be received as meaning natural undulations. The aspect of that in the immediate neighbourhood of Tein-tsin, that is, within a circuit of two miles, is strangely broken by mounds of various sizes and shapes, which are nothing more than graves of former inhabitants of this large city.

In this part of China, the dead are never buried, as we understand the expression; the bodies are placed in huge, massive coffins—these are carried beyond the gates in most instances, and laid upon the surface of the ground. Subsequently the coffins are covered with matting, or encased in brick-work, or thatched over with straw, or covered to a greater or less depth by mould; the more wealthy the deceased, the larger the mound, generally pyramidal or dome-shaped, that is collected over the remains. The coffins of paupers are not only of very inferior wood, but are very slightly covered. The effects of the elements in many instances remove a sufficient quantity of soil to expose those of all classes; thus, the odour of decomposition is often perceptible as we walk along through these extensive burial grounds.

Tein-tsin is a very old city; during its existence, the dead have continued to be disposed of as they now are. It will therefore be readily conceived that the soil must be saturated with decomposing animal matter. Whether this circumstance is sufficient to account for the extreme unhealthiness of localities here, where the soil may have been recently turned up, is a

point that cannot be positively affirmed. We know, for a fact, that in the south of China the vicinity of places that have lately been exposed, are notoriously unhealthy, and it has been asserted that during the time the force was encamped near the graves outside the walls, previous to advancing on Pekin, several cases of what seemed to be Asiatic cholera occurred in soldiers located close to a part that had lately been turned up, but ceased on the regiment moving to a more eligible encamping ground.

It would not, indeed, be easy to picture to one's self a more utterly dreary scene than that which at this season of the year was to be seen around Tein-tsin. Over the seemingly interminable plain, not a sprig of green vegetation occurred to break its brown and arid look. At intervals we saw collected together a few wretched hovels, built of unbaked brick and mud; these were somewhat raised above the level of the neighbouring country, and near them a few leafless trees were the only natural objects visible. In the clear sun-shiny days of winter, the mirage on the horizon gave the idea of the presence of water, although, in reality, wherever water was it was deeply frozen; agriculture was at a stand-still, and as the frost increased in severity, and almost all vapour disappeared from the atmosphere, the cold north wind raised as if in eddies the fine impalpable dust of this alluvial plain, for on not more than a very few occasions did snow cover the ground, and never sufficiently thick to permit it to be drifted into wreaths.

People, unless forced to leave their houses, remained within doors, consequently only a very few human beings were ever to be seen. Flocks of cattle, or of sheep, there were none visible on the plain, after the intensity of winter had fairly set in; even wild animals were scarce. Hares, indeed, were throughout the winter abundant, and a few foxes were also to be met with, but these apparently were the only four-footed animals that defied the cold. Birds even were scarce, the only one in addition to those already mentioned that was abundant being what seemed a species of emberiza or snow bunting; at the commencement of the cold, ducks and geese flew past in flocks, performing their migrations to the warmer latitudes of the south; but during the depth of winter none were visible, except in the

public market, to which they and pheasants were evidently brought from some considerable distance.

On walking a little way into the country on New Year's Day, I reached a village where the agriculturists were busily occupied covering up in pits, similar to what we see at home, a kind of turnip (or green radish), the root being, no doubt, intended for spring consumption. At the same village I observed a kind of raised mud embankment. On ascending to the top, I discovered that it formed an underground apartment, or "tykhana," through the roof of which an entrance and ladder communicated with the interior. Curiosity induced me to descend. On doing so, I found myself in a snug, warm apartment, as compared with the temperature above ground. In racks arranged for the purpose, and so placed as to permit free circulation of air throughout, were piled lines of the vegetable called Pekin cabbage, for winter and spring use. There was free circulation throughout the apartment, and the quantity of decayed leaves that lay about the entrance to the chamber, indicated the care that was bestowed upon the removal of these from the sounder portion of the vegetable. This vegetable has more the general appearance of a lettuce than anything else, but its individual leaves are in texture, general character, and taste, like those of a turnip. There is no distinct "heart" to it, but the leaves run up close together to a height of six or eight inches; the stock so formed being close, white, and much esteemed by the natives. It is also in common use at the tables of foreigners, and is, when boiled, most excellent. It also makes an excellent winter salad when cut across in tolerably thin slices, and mixed with proper sauce. The natives have other methods of preserving it: they sometimes place it in deep pits, which they simply cover over with matting; at others, they pile it close in deep, narrow, earthen jars, which they in like manner cover up; and thus they retain it fresh and good throughout the winter. They prepare it so as to form something like sour-krout, by steeping it in brine; it is in this state often sold in the streets, and, although in regard to appearance, it is most uninviting, is said nevertheless to be highly esteemed by the Chinese.

An attempt was some years ago made by Mr. Fortune to introduce this vegetable into England; he himself collected the

seed from it, and had them carefully conveyed home. Yet the young plant, which was produced in the moist climate of Britain, was, in every respect, unlike its parent; its leaves, instead of coalescing like those of the original plant, began to spread immediately on reaching the surface of the ground. Neither was the flavour of the plant, when cooked, at all like what it is in China. This, as we shall see, is nothing more than the modification which so often takes place in plants under circumstances affected by climate, temperature, and soil.

As the cold of winter continued, small deer, hard as boards, and completely frozen, were brought to market, as was said, from Tartary. Pheasants, and the smaller game from a shorter distance, had been exposed for sale in that state, almost from the very commencement of the frost. Frozen fish were abundant; in fact, it was impossible to expose any article of food, for even a short time, without its becoming so much ice. The Chinese, however, evidently bestowed some degree of care upon the manner of freezing some kinds of their fish; this was done apparently by raising and dipping in water, by means of a string secured through the dorsal fin. In this manner a thick coating of ice was rapidly produced upon the body of the fish; the form, and even the precise attitude in which its muscles had become immovably stiff, being retained by the transparent block of ice; and as the fish had been subjected to the process of freezing while still alive, it was asserted, although with what degree of truth I am unable to say, that on the return of genial spring weather, when gradual thawing takes place, it once more becomes restored to life.

In the immediate vicinity of some villages an occasional plot of green vegetation still existed, defying the dryness and the cold that prevailed, and destroyed every kind of plant and vegetable, with a very few exceptions. These plots of green were, however, sheltered from the cold north wind by a most excellent and effectual contrivance, and which I observed was also in general use around individual huts in villages, where they served the double purpose of protecting the inmates from the cold, and ensuring to each family complete privacy. Fences made of millet stalks, crossing each other, and both thick and close, formed the contrivances alluded to—they were always con-

siderably more than six feet high—formed a perfect barrier against the cold wind; but as no harm ever arises here from the south breeze, an opening was always left on that side for the admission of the genial sunlight and heat; for even in the coldest weather, warmth was conveyed thereby, except where the wind was admitted.

The first indication of farming preparations for the ensuing hot weather was apparent on the 25th of January. On that day the sleighs that have throughout the depth of winter been used entirely for the conveyance of messengers and ordinary merchandise, began to be freighted with manure.

At different parts of the city, and in the suburbs, there are places set apart for the preparation of manure, and where, during the early winter, it was preserved in stacks and large heaps. It is needless to say that these places are offensive to sight and smell in a degree that cannot be imagined by people who have never visited China. Hitherto, the heaps have been daily added to; now, however, for the first time, they were broken upon; sleigh after sleigh was loaded with this very abominable but extremely useful compound; and by means of a pole which a man on the hinder part used between his legs, they were pushed along the ice that covered the river, and thus conveyed towards the fields, for the fertilising of which they were intended.

Up to the end of January we had been using potatoes brought all the way from California, and which had been reshipped at Hong Kong for this place; the natural result had been that they were both scarce and expensive; various other vegetables had been served up at table as substitutes, the principal of them having been "sweet potatoes," of more than one species; spinach and carrots, which abound here. About the time mentioned, a supply of most excellent potatoes suddenly appeared in the market, having been brought down from Tartary. We enjoyed the potatoes very much, but naturally felt some wonder how the vegetable could have got to Tartary; but, great as our surprise at this was, it was increased when we learnt that in some parts of Japan the potato plant, with tubers, is found indigenous and wild. If this be so, and there is no reason to doubt it, the theory of this vegetable being a native of America only,

must henceforward find its fitting place among the popular fallacies; indeed I have it on the authority of Mr. Fortune that the tuberous potato plant is found evidently in a natural state, in certain parts of Japan.

It is not possible to be stationed at a place like Tein-tsin, and not occasionally contrast its general aspect and scenery with those of our own native land. There, in "old England," however great the winter cold may be, vegetation is never utterly destroyed; during the most trying parts, grass at all times covers the face of the earth. In sheltered nooks, and on sunny banks, a daisy, a sprig of groundsel, an occasional dandelion, and a tiny byronica unfold their petals. The deciduous trees, it is true, look bare and wintry, yet the numerous evergreens that adorn parks and ornamental grounds give to the landscape, even at this season, an appearance of fertility if not of richness. There are few parts of the United Kingdom devoid of some degree of undulation on its surface. In the majority we have a constant succession of hill and dale, copse, wood, and field, while at intervals streams beautify and fertilise the district.

How different all this from the winter aspect of the enormous plain that stretches away to the horizon on either side of Tein-tsin. Here all is bare and monotonous; dust sweeps in eddies over a plain almost devoid of life; for the time being agriculture is at a stand-still, and for months few animals or people expose themselves to the cold blasts that sweep across the plain.

Throughout February the aspect of the plains continued what it had been throughout the long dreary winter. It was not until the 1st day of March that agricultural operations fairly commenced. On that day, at a short distance from the city, a man was observed at work in simply breaking the surface of the soil by means of a one pronged mattock. This was "scutched" into mere grooves, for the operation did not extend deeper than an inch or two; no manure was in this instance used; the soil looked rich and alluvial; and in the grooves thus rudely made, wheat was sown.

By the sixth of the month the temperature during the day had become very agreeably mild, although during the night the thermometer had descended to 23° Fahr., and at 9 a.m. was at 31°

In riding across the fields in the neighbourhood of the city, the greater part of them were still untouched by the plough. On a few, people, especially boys, were busily engaged with rakes made of a series of bent pieces of bamboo, arranged in a fan-like shape, and attached to a handle, in collecting the loose straw and grass that may have become detached from their roots during the severity of winter. On some few fields, heaps of manure were being placed at intervals, precisely as may be seen at home, these being for the evident purpose of being spread upon the surface while yet fallow, so as to mix with the soil when that comes to be turned up. The trees, with one exception, showed as yet no sign of opening the bud. This one exception was a magnificent poplar of not less than eighty feet in height, on which the uppermost buds had evidently begun to enlarge, and were in some instances opening.

On the 11th of this month, by which time the indications of the thermometer had risen to 40° Fahr. at 9 a.m., agriculturists in great numbers were employed in sowing the smaller kinds of millet. Preparations for irrigation were in progress; a rude kind of plough in operation turning up the soil; bullocks and donkeys being employed, often together, at other times a mule, or a man was similarly employed.

A further increase had taken place by the 13th in the numbers of people employed in the fields. In one strip of ground situated in a hollow, as if it had at some period or other formed a canal for irrigation, the double process of ploughing and sowing wheat were being performed simultaneously.

The rich soft soil in this part of China does not need to be turned up by the plough to the depth required in England; while its great freedom from the roots of grasses and fern weeds renders unnecessary the use of a powerful plough such as is required in our own country. All that is here necessary is a plough, shaped indeed somewhat like our own, but consisting of a light framework, the "coulter" consisting of an instrument shaped not unlike that used in the highlands of Scotland for cutting turf; this was secured in such a manner as that it rested upon its flat surface in the earth, at a depth of about four inches, that being apparently the greatest to which it was necessary to extend. As the plough was pulled along, it was made, by means

of a couple of boards so placed, to throw the turned up earth into ridges, and by placing upon the point part of the implement a box containing the seed, and which in size and shape was precisely similar to what is used in country retired parts of Scotland, for sowing turnips, the Chinese succeeded in combining in one the two operations of ploughing and sowing.

It was an interesting sight, reminding one of home and early associations, to observe a flock of rooks in one of the clumps of trees that occur at long intervals throughout the neighbouring country. These birds were on the 14th busily engaged in putting together and arranging their nests, although the trees in which they built were bare and leafless. As I observed them, I could not help wondering whether the Celestial rooks are as regular in the commencement of their building operations as their species is said to be in Scotland, where they invariably begin to build their nests on the first Sunday in March, thereby scandalising some "crows" of a sanctimonious turn of mind, who religiously eschew all occupation of a useful kind upon that day.

From the month of October, not a drop of rain appears to have fallen in this part of China until the 15th of March. During the preceding night, and early on the morning of that day, a gentle fall took place. It was neither preceded nor attended by perturbations of the atmosphere; its occurrence being first perceptible by its pattering on the roofs of the houses. So mild had the weather suddenly become, that even already I note that exposure to the afternoon sun is somewhat unpleasant.

In the fields and wide plain surrounding Tein-tsin, no sign of vegetation is yet apparent; all look barren as they did in the dead of winter, and one continuous waste stretches away on either side, far as the horizon. The depressing effects upon a person who is out of health, of a landscape such as this, can only be fully realised by a person who has had under these circumstances to gaze upon it day after day through several months, in some of which it was physically impossible for him to be emancipated, however severely he might suffer from the circumstances of his position.

In early spring, that is, in the month of March, if indeed not in February, we have an opportunity at Tein-tsin of observing what is certainly a more effectual than elegant method of forcing

onions. The bulbs are during winter placed in open vessels containing a little water; these vessels are kept in bath-houses, such as are elsewhere described; there they have the advantage of a moist atmosphere coupled with high temperature, and there they grow rapidly, shooting out pale and blanched leaves, which I doubt not are considered to be a great delicacy by the Chinese, but which, considering where and how they are forced, I do not by any means begrudge to them. In the same manner, bulbs of the double flowering narcissus are made to germinate, and they afterwards speedily flower by being simply retained in water as hyacinth bulbs are at home. With the first genial weather of spring, branches of these in full bearing are hawked about the streets.

By the middle of the month, the fields were absolutely dotted thickly over with people engaged in farming operations; all were busily at work, few raising their heads to look at the stranger as I rode past, and thereby contrasting strangely with their brethren of Ireland, or of England either. Some were engaged in planting chalots in small beds that had just been prepared for the reception of the bulbs. Others were employed in turning up the soft soil of patches that had evidently borne cabbage of the Pekin species during the previous autumn. This they effected by means of a very simple implement shaped somewhat like a hoe, but attached to a handle by means of a stem and socket bent like a "swan's" neck, so as to turn the edge of the instrument to an angle of about 45°. The labourer used this very useful instrument by turning the soil towards him, and so clean and soft was the soil so turned, that it looked more like that of an extremely well kept garden than what we are accustomed to meet with at home as farming. As a general rule the labourers on the field, and peasants generally, adopt one uniform colour of dress. The colour is indigo blue; the cloth generally of native manufacture, but it was observable that American drill was pretty extensively used to make the short loose drawers and short tunic or blouse, these constitute the entire summer wardrobe of these people. When we consider how very conservative are the ideas of the Chinese, we may naturally conclude that this has been the colour and "cut" of the peasants dress here—it may be for thousands of years—as

the implements now used by them may be considered to be facsimiles of those that had been employed in this country prior to the commencement of our era.

Manure having in the first instance been spread upon the surface, embankments were then raised throughout the field about to be brought under cultivation, so as to divide it into small plots of about eighteen feet long by four broad. Between these small divisions, water-courses were prepared, so that irrigation could be the more readily performed either from the river or from the numerous small canals for the purpose that intersect this portion of China. These plots having been turned up by the hoe, as just mentioned, wheat was being sown in them in very regular rows. The soil was then brought over the grain by means of a garden rake, but turned as the hoe has been described to be, only to twice the extent, so that the teeth merely touched the surface of the ground horizontally; thus effectually carrying along with and upon them, any unprepared soil or objectionable matters that might exist, and leaving the earth itself smooth and neat. Along the sides of the small field water-courses for irrigation, beans were being planted, two and two put into a small hole that was made by a kind of spike; the interval between these holes being ten or twelve inches. The seed beans themselves were of the common flat description met with in England, only not quite so large. Some were brown, but others, although perfectly dry, yet retained a green hue. The quantity of ground that was being planted with chalots was perfectly surprising, miles of fields actually seemed in process of being planted with this vegetable; yet among all the numbers of persons busily engaged in the work, I only on one occasion observed a woman. The weaker sex is almost completely unfitted for hard labour by the abominable artificial deformity of cramping their feet, to which they are subjected. It must, therefore, be under the most pressing necessity that they are ever thus employed. I have at various times subsequent to that which I am now alluding to, carefully observed whether women really were employed in out-door labour, and on not more than two or three occasions have I seen them thus occupied. On one of these, however, they were occupied in raising water for irrigation, a description of labour that must have told very

severely upon them. One of the methods of raising water for irrigation, namely, by a basket secured in a particular manner between two ropes, and worked by a person at either end, has been already described. This method is apparently the least laborious of the two, and it was only at it that women were employed. The other method is by means of a kind of bucket secured by a rope or bar of wood to the end of a high pole; this pole,* which acts as a lever power, is supported at its centre by a fulcrum, a weight being placed at the further end, sufficient nearly to balance the water vessel when full, and by alternately lowering the latter into the wells which have been dug for the purpose at intervals, a constant supply of water is readily procured; the vessels being made somewhat like inverted pyramids or cones, so that on being brought to the ground when full, the act of touching the surface upsets them, and thus discharges their contents. A few wells of this description are, as first mentioned, scattered about the extent of fields; they are all very superficial, in fact not more than eight to ten feet at the utmost, and carefully protected inside by brickwork. The water in these is not employed for culinary purposes in consequence of the large amount of saline matter with which it becomes impregnated from the soil, and indeed, generally speaking, canal or river water appears to be preferred even for agricultural use to that from wells; no doubt from the fact of these containing less of this combination of nitrate of potass and chloride of sodium, which from a superficial examination seem to form the particular compound with which the soil is impregnated.

I must observe that I am still describing what was the state of the fields on the 15th of March. On that day I remarked that wheat which had evidently been sown during the preceding autumn, and had withstood the severity of the winter frost, now began to show its green leaves. A few small plots of ground thus showed a faint change of colour, but, with this exception, the vast expanse of plain was still arid and bare as before. The atmosphere already felt balmy and spring-like. A few cirro-cumulous clouds appeared in the sky, the amount of vapour in the atmosphere had undergone a perceptible increase, and the

* Precisely similar to the "skedoof" so common in Egypt.

weather is described as being similar to fine spring weather in Scotland. On the 16th the recurring warmth had revived a few insects, which now, but half recovered from their long winter sleep, began to show themselves.

The first regular burst of vegetation was observed to take place on the 18th; on that day a few tender sorts of wild plants projected from the earth to a height of not more than half an inch, and then, only in damp and sunny places; and elm trees were found to have opened their dark-brown florets, although no sign of a leaf was yet visible upon their branches. Notwithstanding the almost total want, as yet, of any green thing in the fields, there was yet a degree of fascination in them which led me almost daily to wander down among them. The aspect of the labourers, the groups in which they were every here and there collected, the peculiar, but in all cases most excellent implements they used, the strange crops they were planting or sowing, the exquisite manner in which they cleaned, prepared, and rendered smooth the earth before sowing in it, the simple yet ingenious means by which the free access of water throughout vast fields was provided for, were all subjects of much interest to observe. All was new to me, and therefore calculated to arrest attention; but what was perhaps a source of even greater interest than these, was to watch and note the gradual advance of season, and to look for the appearance of products, the nature and description of which were as yet to me as a sealed book about to be opened.

It has been already remarked that some birds had at this season commenced their migration northward; among others, swans had been observed in their flight. Some of these birds were soon exposed for sale in the market, and, much to our surprise, one was one evening produced upon our mess table all trussed and roasted like a gigantic goose. We had never before heard of swan being eaten; on the contrary, we were aware that its flesh was among the prohibited articles of food according to the Mosaic law.* We remembered, however, that under his code of rules as to what the Israelites were directed to eat, drink, and avoid, they never could have enjoyed the luxury of jugged

* Deuteronomy, xiv, 16.

hare, pork-sausages, and various other articles of diet which are now voted to be by no means bad; nor did we, therefore, see any just cause or impediment why we should not send our plates for a helping of roasted swan. We did so; the meat was voted delicious; we had it served up cold on the following day; it was, if possible, still more appreciated, and before the birds had completed their migration, we were able to enjoy for a second time our treat of the forbidden delicacy.

On the 20th of the month I had occasion to ride past the little plot of ground in which, on the 1st, I had seen wheat in the act of being sown. Some idea of the rapidity with which vegetation advances was at once given in the circumstance that the young crop, during the twenty days that had intervened since the time of sowing the seed, had grown to a height sufficient very nearly to hide the surface of the soil.

The want of birds throughout China is often made subject of remark. In the particular part of that country in which we are now situated, there appear not to be more than a very few species that are stationary and resident; all the others are only occasional visitors at the change of seasons as they pass from north to south, and *vice versâ*. During the winter, not a single aquatic bird had been seen except dead in the market, and there there was abundance of duck, teal, geese, and, as has just been said, at one time of swan. On the 24th of March, however, a small gray tern appeared, performing its graceful gyrations over the river, as it pursued its search for living food. The variety created by the visit of this one specimen was agreeable, for the solitude which the absence of the feathered species gives to a landscape can only be fully appreciated by sojourners in China, where, probably more than in any other country, this is to be observed.

On the 25th a very large flight of swans passed towards the northward. In riding across the fields, I observed that a dark-coloured plover, with white tipped wings, had, for the first time, made its appearance. It rose as I approached, taking to wing while I was still at too great a distance to observe with precision its specific markings. Now, for the first time, leaves of grass appear on the banks, giving to their hitherto sombre brown colour the faintest possible tint of green.

By the 28th the appearance of the country had fairly taken on its vernal hue. At this time, after a long country ride, I noted how pleasant it was to observe the manner in which the young grain and other crops began to send up their green leaves. A stray green leaf might be seen bursting open the earth upon some bank that faced the south, while the branches of trees, with the exceptions already mentioned, showed no sign of leaf. On this day, while riding along the banks of the river, I was gratified to observe some familiar-looking gray gulls—their general aspect and note precisely similar to those of the British species—looking for food in the soft mud of the river sides, that had been left exposed by the receded tide. An avocet dropped down in the midst of these littoral visitors while I was in the act of observing and admiring their graceful movements; and, heedless of my near proximity, it at once commenced its curious zigzag manner of hunting, with its beak deeply imbedded in mud and slime, for the insects and shell-fish upon which it feeds.

A peculiarity of Chinese birds may be noted in this place as well as any where else; it is, that whereas to the natives of the country they are extremely wild, they are said to be comparatively tame when approached by an European. The reason of this, as a matter of course, is, that they know how destructive of their life is the Chinaman, but they as yet have but very imperfectly learnt how deadly to them is the vicinity of an English sportsman. This, however, they will sooner or later discover.

The sudden transformation in the aspect of the river itself that had taken place since the disappearance of the ice was matter for wonder. Boats, and a crowded floating population had, as it were, sprung into existence; at the same time, no perceptible decrease was observable in the crowds that thronged the streets of towns and villages. During the depth of winter all the junks that had not been overtaken by ice too suddenly to permit them to be drawn up from the river, were lodged in numbers of extempore docks, made for the purpose, at short intervals along the banks in the immediate vicinity of the towns; these docks being so made that they could be flooded at full tide, but left dry as it receded; and an embankment of earth between their mouths and the river forming a cheap and efficient

mode of dividing these effectually, and at the same time forming a footpath for passengers.

On the last day of March I had an opportunity of observing a point of very great interest while riding along near the city. I had often been informed that during the advance of the army to Pekin last autumn, vineyards teeming with fruit were frequently passed. I had also been told that throughout the province of Chih-li, the grapes of Tein-tsin were famed for their excellence. During winter this delicious fruit had been frequently served at mess as dessert; but hitherto, in my rides and walks, I had failed to find one single vine, and therefore naturally wondered how or where they were cultivated. The mystery was now solved. In a small enclosure, the walls of which were of millet stacks, although now old, and in several parts broken down, a number of people were engaged in disinterring vines; some of the trees had already been completely disinterred, except their roots, and now lay spread upon the surface of the ground; others were being disinterred from what had looked like the round mounds of earth that distinguish some of the Budhist graves in this part of China; it, in fact, became immediately apparent, that with a view to save the vines from the intensity of winter, they are carefully coiled up, and being placed in an excavation made for the purpose, and so near the roots that these may not be disturbed, are then covered over with soil to a depth sufficient to protect them from the frost. This being the case, therefore, it was now no matter of wonder that no vines had been visible during winter.

On this day the surface of the fields that had lately been sown and planted, showed, for the first time, that the young crops had advanced to the surface. Young and tender shoots were seen bursting the earth—some, as it were, cracking it and raising little sods upon their still bent tips—others were carrying up the remains of the seed from which they had sprung. The flowers of elm trees had now fully opened, presenting themselves in dark red bunches as they do in England.

Immediately in front of the door of my quarters stood a tree, in general aspect like an apple. Day after day, for several weeks, I had watched it. I had often been told that with the occurrence of spring vegetation, leaves and flowers burst into

being with such suddenness in this part of China, that I almost expected each succeeding morning to find in full blossom and foliage what had the previous night been but a bare trunk and branches. Each day, however, I watched in vain for this sudden transformation. The month of March advanced, and yet neither did leaves appear upon it, nor upon any other. The fields were not yet richly green with young crops, and grass, and, in fact, the aspect of the country as compared with "home," was bare, inhospitable, and uninviting.

With the advent of April, however, a sudden change in the progress of vegetation occurred; the leaf-buds of the tree I have just alluded to had opened, showing the fresh green leaf still partially curled up, although in the act of bursting. It now became apparent that the tree was an apple one, and this fact increased the curiosity with which the occurrence of flowers was looked for. Some rose bushes of various sorts that had lain neglected throughout the winter, were also found on "all fools' day" to have thrown out a few small red dots, which we knew indicated where shoots would sooner or later extend from. It is almost needless to say, that no sooner did this indication of vitality on the part of the "briar bush"—for such it was—become apparent, than it was taken into most careful nursing; the dead twigs were cut away, and the plant, if heretofore neglected, was for the future most carefully looked after.

As will be seen, by what is to follow, the progress of vegetation was from this date extremely rapid. On the 2nd of this month (April), some extremely pretty dwarfed peach trees, of what is called "the rose flower variety," were brought round in pots for sale. This variety derives its particular name from having the petals of the flower multiplied, so as at a little distance to resemble a rose. The flowers of different individuals were not of the same colour; thus, those of one were white; of another, of that particular shade of pink from which the name of "peach blossom" is taken; but in both, the profusion of flowers was so great as almost entirely to conceal the apparently old, gnarled, and crooked branches of the plant.

The manner of producing this old and dwarfed appearance in these plants was at once apparent on examination. The first part of the process seemed to have been to saw right across a

peach tree stem of about an inch and a half in diameter; leaving the stump about eight or ten inches high from the flower-pot in which it was growing. From the upper part of this stalk, shoots appeared rapidly to spring, just as oziers do from the summit of willow stems, or, as they are called, pollards, that in some parts of England give a characteristic aspect to the landscape. These young shoots appeared to have been afterwards divided in a slanting direction to about half their diameter, after which they were bent at right angles at the point of division, and secured in their unnatural position by means of fibres of grass. It appeared, however, as if some of the fresh shoots that would have been superfluous were cut off; leaving only those that in the opinion of the *manufacturer* were likely to become useful in forming some of the fantastic shapes into which the plant was destined to be trained, or ornamental, in bearing a load of the characteristic blossoms. Some of the more recent branches were so tender as to be readily bent without being partially divided; these were trained like the others, and secured, like them, by grass fibre; the effect produced being to convey the idea of a miniature tree, which, however, was far more prolific in flowers than one of natural size would have been.

On the 3rd, willows were seen with leaves quite unfolded, their male catkins hanging pendulous from their branches; a poplar similar to that already noted, although still devoid of leaves, bore, suspended from its uppermost branches, at a height from the ground of not less than sixty feet, long dark-brown catkins, the colour of which contrasted agreeably with the silvery white colour of the bark upon the bare stem. The evening breeze was cold; the thermometer indicated 51° Fahr., and as these pendulous flowers waved backwards and forwards high above our heads, they seemed to indicate rather a battling against the elements and the season, than that they had been invited into being by a genial climate. It was not until the 9th of April that field flowers were observed to have unfolded their petals—at this time the lowest point during the night by the thermometer was 47°; at 9 a.m. the temperature indicated was 59°. Walking across some fields, I was agreeably surprised to observe the small familiar shepherd's purse, partly in flower,

and partly showing its heart-shaped seed-vessels, thus indicating that it might have been found in bloom several days earlier had it been sought for. As, however, its locality was immediately underneath some willow bushes that lined a small water-course, extending from one of the wells dug in the open field for purposes of irrigation, its presence had hitherto escaped me. The progress of vegetation in the fields was observed to have at this time been wonderful. Some of the winter wheat, as also that sown not more than five weeks ago, now waves on the fields, as the breeze passes over it. Native radishes and turnips, which about the same time had been planted for the purpose of yielding seed, are now in flower. Vines lately disinterred are making their appearance in the most out-of-the-way and unlooked-for places, and extempore trellis work of strips of bamboo are being prepared for them. Digging, planting, sowing, and irrigating, are all in full operation; thus a walk among the fields is really productive of pleasure and gratification to any person who takes an interest in farming operations.

Having unexpectedly discovered a nursery and greenhouse for forcing plants, an inspection of its contents became a source of much gratification to me, not only on the present but on future occasions, and as I shall hereafter have occasion to recur to these, it is only necessary at the present to note a few particulars connected with its appearance at this early period of the season.

A large number of shrubs of various kinds had evidently been only lately removed to the open air from the underground apartment in which they had been preserved throughout the long winter. This apartment was, in a great measure, similar to those in which cabbages are preserved, and which have been already described. Its roof being covered by a layer of straw and mud to a depth sufficient to exclude the cold that had prevailed.

Numbers of the plants that were displayed were undergoing the process of dwarfing, which differed in no way from that already described, except that here the spaces in the branches, where the incisions previously mentioned had been made, in order to facilitate their being bent, as well as to decrease the amount of sap conveyed to them, were filled with the tenacious

clayey mud which forms the greater part of the soil in this locality.

The greenhouse was a long building of a tolerably substantial nature, when we take into consideration the very fragile and temporary nature of edifices generally in this part of China. Like the house of a very famous Irish gentleman, "all of the oulden time," this one was built of "mud and (millet) straw," &c.; like it, also, there was "a hole on top, through which the smoke so gracefully did retrate," but in the present instance the "hole" was by means of a chimney, and the entire building appeared extremely well adapted for its purpose. Its front faced the south, but strange as the fact may seem, there was not a pane of glass in it.

As elsewhere mentioned, glass is not used in this part of China for the purpose of making windows, as it is with us: oiled paper is here almost the universal substitute: of this material, accordingly, secured upon frame-work of wood, the entire front of this greenhouse consisted, the presence of oil throughout its texture rendering it semitransparent. The interior of this building contained stands for plants, which stands were extended across the mud floor, and separated from each other, as well as from the walls, by passages sufficiently broad to permit a person to pass freely along these directions: on each range of stands were placed in pots numerous plants of the *Jasminium sambac*, the flowers of which were just about to open, and the leaves of which, notwithstanding the faint light admitted through the Chinese substitute for glass that formed the front, looked fresh and green. An equable temperature was maintained within by means of common Chinese stoves; no thermometer was in use whereby to regulate the temperature; which, so far as could be judged by the sensations, seemed to be about 75°, the temperature of the same forenoon having been 53° Fahr.

On the north side of the Imperial Canal, and close to its bank, a series of fruit and flower gardens occur at short intervals; nor are they enclosed by any more substantial wall than what is formed by millet stalks erected as a fence: in some of these I observed on the present date, namely, 10th of April, Sunday, peach trees so thickly covered with their beautiful blossom, as

from a distance to appear like so many masses of pink: two other trees in the same enclosures were nearly as densely covered by pure white flowers; these, as I afterwards ascertained on more close inspection, being cherry trees. Near these gardens, but extending at intervals along the canal to the extent of above two miles, are a succession of vineyards, yet a month ago not a vine was visible here, they were then still imbedded in the earth. On the 18th of April I note that now they are all trained upon trellis work, and rapidly bursting into leaf. Elm trees and willows are in full foliage. In the orchard, peach, pear, apple and cherry trees are loaded with blossom; a few plants of that beautiful plant, the *Dialytra spectabilis*, appear in the gardens; the weather is balmy and springlike. From the garden, near which I now stood, an extensive cultivated plain stretched away to and beyond the horizon: in many parts of it the growing crops were now apparent above ground; in others, labourers were busy at work, ploughing or sowing; the canal itself was literally covered with junks and native vessels of all kinds, some sailing with wind and tide, others being tracked against both by means of ropes secured to the masthead and drawn by the crew, who for this purpose walked along a pathway on the bank; in fact, the entire scene was now one of bustle, life, and animation.

A somewhat long ride on 20th April, took me across a wide tract of country, extending southward from Tein-tsin, and from the Grand Canal: here the fields were far less extensively cultivated than those that extend along from the opposite or left bank of that canal; between the patches that have been brought under cultivation are numerous tracts still arid and bare; altogether, vegetation here is far behind what it is on the northern city, and the apparent infertility of the soil contrasts strongly with the richness and genial appearance of the vast extent of plain on the opposite side. This infertility of the fields here generally, and absolute barrenness of some parts of them, became afterwards more fully apparent than they were even at this time. Nor was there any great difficulty in finding an explanation of the circumstance. The soil to the southward of Tein-tsin is deeply impregnated with the saline production to which allusion has already been made; but in some patches to

a far greater degree than in others. In places where the salt most abounds, a few shoots of salsola plants make their appearance here and there; but around these, when the atmosphere is dry, a white efflorescence, like hoar frost, covers the surface of the grouud. Along the more extensive parts of the plain, however, the soil is less saline, and these have all been cultivated.

On my way back from the present excursion, I visited a garden in the vicinity of one of the principal temples or joss-houses in the outskirts of Tein-tsin; here I found in full bearing, with their beautiful clusters of flowers, the blue and the white lilacs that form so ornamental and favorite a shrub in England; these looked like old familiar friends, and brought up recollections of times and circumstances now long past, but the memory of which still clings to me, it may be with some associations of romance that have resisted the roughing incidental to a somewhat protracted "battling with life." A few pages back I mentioned how suddenly the foliage had appeared upon an apple tree that grew immediately in front of the quarters which I occupied: on the 21st of April I noted that it had become completely covered by a mass of beautiful pink and white blossoms, and that these had burst from what had on the previous day been only buds, to the full formed flower of the apple.

Henceforward it became a matter of difficulty to keep a note of the appearance of plants, so rapid was the succession of flowers upon the fields and by the road sides, or irrigation water-courses. On the 22nd of the present month, a long ride in the afternoon discovered to me various familiar home plants, and some no less familiar birds. Suddenly I became aware of a bank upon which a nodding violet grew, and dismounting, examined carefully the Chinese representative of our English favorite of early spring. The present differed in some respects from these, having, in fact, nothing but its colour and general appearance to indicate its relationship to the beautiful, hairy, and sweet-scented species that in early boyhood I used to pluck in the heather, moors, and on the river banks of dear old Scotland. Along the plains, what seemed to be an ononis, or restharrow, occurred in patches, and here and there pink and white and blue flowers of an astragalus, stood up to a height of three or four inches through the carpet of green grass by which

the fields were now covered. A small early woodroof, or asperula, not more than an inch or two high, showing its dangling yellow anthers at intervals as I passed along. Flights of what were ascertaincd to be protincole ran along the ground, rising into mid air as I attempted to near them, and tripping lightly along the banks of the canal were several specimens of the gray and white wagtail. It was not, however, only in the field that the progress of vegetation was to be traced; the market was by no means a bad place to observe it in. Here, then, on the 23rd, were exposed for sale mushrooms of orthodox appearance, and as we found for a long time subsequently, of very orthodox flavour, at least when nicely cooked, and the "mantle left on."

The heat of the afternoon sun had, by the 24th, become somewhat oppressive: on this date I have noted in my journal that in the fields, the spring plants of the ordinary broad bean project a couple of inches above the ground; French beans are equally forward, and peas begin to throw out their tendrils; maize plants are also more than two inches high; and in other parts seeds of this plant were being sown. It will no doubt be observed, that the appearance of these plants has been noted by me, although no mention is made of the date on which they were sown. This must be unavoidable, when it is remembered that my visits to the fields were only made at intervals of some days, and that a natural desire for variety prevented me from proceeding day after day along the same beaten path. Peaches had begun to form upon their trees; a small mulberry tree was rapidly forcing its pendulous fruit, its leaves being in full foliage, but apple and pear trees were still covered with flowers. Some lily plants had sprung up in gardens, melon plants had begun to project from the ground; wheat and beans were sufficiently advanced to wave in the breeze as it passed over them; and as regards trees, willows and elms; these two most common species in this part of China were in full bearing of both leaf and flower. Lettuces must have made their appearance above ground several days ago, for on the 29th a few were brought round for sale: these were still small, but made into salad were excellent. In the fields, cucumber plants were now apparent above ground, as were those

of melons, and some of the cereal crops showed signs of "shooting."

On the first day of the "merry month of May," I found a small procumbent cruciferous plant, showing a profusion of its white petals. It grew in a moist and shady situation, and near it were found a dead-nettle or lamium, also in flower, while from among the soft grass that in this particular spot grew plentifully, a sedge shot up its sombre and peculiar head of flowers. The fields generally were now covered by crops of different kinds, the greater number of which had attained considerable height; in some places, and these indeed of great extent, tracts of land were as yet bare, the seed for which they were intended not having yet been sown; in others, however, the cereal crops were far advanced towards maturity; and on the 7th the fact was noted, that some bearded wheat and barley were in grain, although the stalks were so stunted as not to be above a foot and a half in height: the fields of these crops were those that had received the seed between the 1st and 10th of March, so that the time that had elapsed from then till now is not more than above two months: on the 9th, bean plants in the fields had come into flower, and so also had some few patches of white peas that occurred here and there, in the immediate vicinity of villages. I had afterwards to remark, that this delicious adjunct at dinner, although it apparently grows well where sown in this part of China, is very scantily cultivated; and what is equally strange, the natives do not appear to raise it in successive crops, as those of some parts of India do. Here, however, I may remark the difference of the periods of the year as compared with India, in which field crops such as I have been describing are sown. In that country, the heat of the climate would, long before May, have parched both beans and peas; nor is it often that wheat, even in the Punjab, remains upon the fields beyond the early part of April. There, however, the comparative mildness of the winter renders that the season for prosecuting the cultivation of this description of crop, which is accordingly called the cold weather crop, in contradistinction to millet, rice, melons, &c., which form that of the hot and rainy seasons.

It was evident that the stunted appearance of the crops that has already been alluded to, was on the present occasion caused

by a delay in the occurrence of rain, which has for some time back been anxiously looked for by the natives; when, therefore, a slight fall took place on 10th of May, there was a general thanksgiving to "the dragon" for the mercies thus bestowed. The manner of testifying this thanksgiving was undoubtedly somewhat noisy and boisterous; but this, no doubt, was in accordance with the peculiar tastes of the myth to which they were addressed. Bands of people with a kind of drum, a shrill instrument not unlike a trumpet, bells, cymbals, and gongs, set to work, as hard as ever they were able, by making as much noise on these to "chin, chin, joss" for the showers that were then falling upon and fertilising the fields. I have, unfortunately, omitted to note that during the early season nursery and garden plants were plentifully brought round the streets for sale; some of these were exceedingly pretty, others neither pretty nor interesting. The precise dates upon which these made their appearance have unluckily not been recorded in my notes, but having purchased a considerable number as they grew in pots, for the purpose of ornamenting a very unornamental residence, these may be enumerated in this place. Amongst the earliest in flower of these were several kinds of rose; the familiar one known in England by the name of the China species, with its delicate reddish flowers, was early in bearing; and although certainly it did not throw out fresh blossoms during the ensuing season, it did so at irregular intervals, continuing to be an ornament throughout the whole summer. Next to it in frequency, and far excelling it in beauty, was the pale cream-coloured flowers of what, according to Mr. Fortune, is becoming familiar in England, under the name of "the seven sisters," from the manner in which that number of flowers grow from each stem. The common red geranium, so well known in England, was nearly equally common here; so also was jasmine, both white and yellow; lilies, irises, Solomon's seal, and a broad-leaved species of sedum, which although not yet in flower, were nevertheless plentifully sold; pomegranate trees, small and large, and densely covered with flowers, whose size was curiously enough proportioned to that of the plant, were abundantly procurable; so also were apple trees in blossom and fruit—oranges, large and small —not even excluding that extraordinary monstrosity the five-

fingered citron,—all being sold at a price so low as to make us wonder how it could remunerate the nursery men who had reared them, for the majority are not natives of this neighbourhood, and required to be carefully tended during winter in the green-houses already described.

It was somewhat amusing to observe the very heterogeneous nature of the plants, which from time to time were in the early part of the season brought round for sale; whether these were merely intended for the foreigner, or whether they found a sale among the natives themselves, I cannot say; but their bare enumeration will give an idea how strangely they were at times grouped together.

Of shrubs, there were in addition to those already mentioned, a species of plum, peaches, and oleanders. Two species of honey-suckle, one precisely similar to that of our own home woods were also brought, and being placed out of doors formed throughout the succeeding season an ornament to the door way, as their twining shoots extended themselves around the pillars that supported the temporary verandah of matting which became necessary during the heat of summer, to protect the fronts of our houses from the extreme fierceness of the sun. All these plants, with the exception of peaches and pomegranates, were in their natural state; these had been more or less dwarfed, or treated by artificial means. The shrub, however, upon which the Chinamen seem to exert most ingenuity in producing monstrosity and deformity, in this part of the country, is the *Thuja orientalis*. This they convert into the likeness of animals and monsters, by means of cutting some branches, twisting others, and utterly destroying the natural beauty and symmetry of all. In the south of China, the privet is the kind of shrub most commonly used for similar purposes, but here, it is left to produce its branches according to its own pleasure; being cultivated in pots in nurseries, similar to those already mentioned.

Amongst the earliest plants that were hawked about the streets for sale was a peony* of very ornamental kind. So early as March we had been puzzled to decide what was the nature of the plant whose ranunculous-like leaves covered some fields of consider-

* Called, in Chinese, "Mow-tan."

able size. Soon, however, the large beautiful flowers made their appearance; plants were then taken up and placed in flower-pots; for the Chinese seem to like moving flowers in this manner, after they have fairly flowered. These peonies were all very "double," but of varying degrees of pink and red colour; they have a very ornamental appearance, and are purchased partly with the object of being arranged in halls and about doors, and partly for the purpose of the flowers being taken to ornament the hair of girls and women.

Small vines were, as may readily be supposed very great favorites among purchasers of plants; they accordingly met with a ready sale.

Among the plants which are esteemed in consequence of the beauty of their flowers, were carnations and sweet williams; holy-hock and marsh mallow; wild datura, or the stramonium plant, was also brought round for sale; sometimes in the same basket with small plants of French beans, a wild species of solanum (*nigra*), and melon plants. This mixture, however, strange as it was, did not include all the forms of plants that were hawked upon the streets, placed in pots as if they had been objects of great rarity and beauty. Among plants of this latter description was a wild kind of polygonum, which grows in marshy places along the river sides, to the height of five and six feet; and which is on account of its numerous drooping spikes of pink florets, decidedly the most ornamental of the present class. The others of less pretence included some species of artemesia, for several kinds grow wild in the fields, and although devoid of beauty possess more or less sweet smell, varying in intensity from that of the wild tansy at home to that of the more favorite "southern wood," so familiar to all who have visited the highlands of Scotland, where it is an especial favorite.

Another old Highland favorite, which here also found a place in pots, and was sold upon the streets was mint. Horehound was also occasionally met with, although much more rarely, but with these it was not unusual to see carefully placed in earth and settled in a flower pot, a common plant of beet. Nor was this all; for in others, chalots were artistically arranged, and offered for sale, as if they had been most precious bulbs, and the scent from their fresh green leaves an odour of the most fascinating kind.

Flowers, vegetables, fruit, and crops in general, had, after fairly appearing, continued to advance favorably towards maturity, until all met with a sudden check on the 13th of May. The season so far had been perhaps more than usually dry, yet there were good prospects of a fair return of farm products. On that day, however, occurred an electric storm, which is described in its appropriate place; on the following day many leaves, and not a few of the more tender parts of plants were found curled up and of a blighted appearance, as the result of this storm; wheat generally was now in ear; not only the bearded kinds, but also the more ordinary descriptions, but the straw was in all instances short and stunted; the heads of grain were small, and the general aspect of the whole very different from the luxuriant richness of a field in England covered with the same description of crop.

The first fruit of the season that was exposed for sale was cherries, very small and very insipid. In colour they were of a fresh pinkish red, similar to those of home, but in no one other respect did any similarity exist between them and those of our own country; neither were they very abundant in the market; a few only were exposed for sale at the stalls, and, except by children, they did not seem to be readily purchased.

Early in the present month mushrooms had, as already mentioned, been brought into market, and had for some days formed an agreeable adjunct daily to our dinner. On the 26th, French beans were produced at table, thus showing the extreme rapidity with which this description of vegetable becomes matured in this vicinity. A ride across the fields on the following day enabled me to see the farmers engaged in clearing and raising the earth about the various kinds of onion, chalot, and garlic, which, if we were to judge from the immense tract of country that was now green with them, formed one of the principal articles of food of the natives.

Beans were plentifully in flower, wheat, as already mentioned, was fully in ear; millet was in some places being sown; in others, the young plants of it were two and three inches high; cucumber plants and melons were trained upon standing fences composed of millet stalks so arranged as to form with each other an open network; and in other places, fences or open trellis

work of similar kind was giving support to the twisting stem of what we subsequently ascertained to be a hairy description of what is called the "sweet potato." These supports are made with great neatness, and in as far as the cultivation of cucumbers is concerned, might well furnish a hint, by no means unworthy of being taken in England.

On other portions of the fields gourds and pumpkins of various kinds were rapidly advancing. A broad-leaved species of the egg plant or brinjall covered several fields of considerable extent; everywhere the ground was in process of irrigation; the people employed in this kind of labour working most industriously throughout the whole day, nor ceasing even after a heavy fall of rain, except till the succeeding morning.

For the first time this season cucumbers were served up at dinner; they were small, and, as compared to those of England, or even of India, very inferior in quality; the Chinese apparently studying how they can produce quantity rather than quality in both fruit and vegetables.

I have casually mentioned the fact of peonies having in early spring been cultivated in fields. On the 28th of May I had an illustration of how rapidly one crop is in some instances made to succeed another here. Walking along the fields at the outskirts of the city, I passed one of these that had been under cultivation with this exceedingly ornamental crop. Now, however, it was bare, and ready prepared to receive some other description of seed.

The month of June set in mild and agreeable. On the 2nd the temperature was noted as having at its lowest been 61°, and at 9 a.m. 68°; a slight shower of rain had fallen during the previous night; there was just enough of humidity in the atmosphere to render it agreeable, and a gentle breeze prevailed from the south. So pleasant was the temperature, that in company with some others I was able to enjoy a walk of not less than six miles, and I mention the fact in order to show that notwithstanding the intense heat which, as we shall see presently, soon afterwards prevailed, the temperature up to the present time was, as compared with that of India, comparatively mild.

It was not until now that I could note the circumstance of the plain which stretches away to the south and west of Tein-

tsin, having become almost entirely green. On those parts of it that had been cultivated, the growing crops had completely hidden the surface of the ground; but there were numerous tracts, apparently too arid for cultivation, and these had retained till late in the season, the same brown, dry, bare appearance that throughout the long winter had given them their dreary inhospitable look. Some few bare patches there were still, and these white on the surface with saline efflorescence, with a few solitary looking plants of Chenopodium, and salsola growing from them; the greater part, however, was now covered by a soft green carpet of growing grass and sedges, and the country generally had at last assumed its summer aspect.

Barley had by the 3rd of June begun to turn yellow in the ear; cumin, a plant which seems to be used tolerably extensively in Chinese cookery, was seen growing in patches. In some places fennel was cultivated in beds; the plants being now several feet in height, and rapidly progressing towards the development of flowers. Celery, although not more than three or four inches in height, covered parts of the fields to a considerable extent in the vicinity of villages. The small plants of this vegetable were much used in native cookery, as well as in that for foreigners. The growers of it, however, seemed to have no idea of the art of bleaching it, nor of cultivating it so as to increase its size and flavour, as is done in England. In other patches of the fields, young carrot plants were seen growing plentifully and luxuriantly; yet, when we afterwards had an opportunity of tasting them at table, they were found to be very inferior to what we had been accustomed to at home; lettuces, however, which also were now plentifully grown in the fields, although when brought to table and mixed with the necessary sauces, made most excellent salad, were, in appearance, as they were seen growing, very inferior to British ones.

It will be observed from the hasty sketch now being given of the various kinds of crops in cultivation near Tein-tsin, that they present a strange mixture of garden and farm ones, as met with at home; while among them are others that flourish principally in tropical countries, as, for instance, millet. There is, however, no distinction made here, or scarcely any, between gardening operations and those that are more properly considered

to belong to the farm; thus, the plough, although used in the more extensive fields in which wheat, barley, and millet of its different kinds are sown, is not employed in tilling land intended for the cultivation of the more succulent description of crops already mentioned. The hand-hoe, and small spade, are the implements chiefly used in the latter case; so that, as already observed, a great part of the farming operations here are in reality what with us are restricted to the garden.

It will also be observed that in offering my remarks upon the successive vegetables that appear, I have taken opportunity to compare their qualities with those of similar productions met with at home; and it will, I trust, be tolerably apparent that in every case the corresponding products of England have gained by the comparison. In this I have had an object; it was to convey as correctly as I am able, the impressions made upon me at the time, and in so doing to indicate some of the respects in which Chinese garden and field produce fall far below those of our own fair land.

There is a peculiar tendency among the great majority of men who visit foreign countries to lavish unqualified praise upon not only the products of these, but upon the people, their customs, language, and institutions, to the disparagement of all that they had ever seen on their own native soil.

Accounts that had been given of this part of China were, for the most part, all written in this strain; the climate was described as exquisite; the soil as one of the most fertile upon the face of the earth, and both vegetables and fruit so exquisite and luscious as to excel anything to be met with at home. Personal experience has shown me that in every one of these respects the advantages of this neighbourhood have been altogether overrated in the descriptions of them published, and that among the residents here the entire province is looked upon as the most unproductive in China.

In the orchards apricots and peaches had partially formed on the trees. Among the familiar plants in nurseries, were hollyhock and hibiscus in flower, and numerous pomegranates in full bearing of their peculiar bright red flowers. Others, however, presented blossoms of a very pale colour; and I may here mention the circumstance that, much later in the season, when the

subacid, refreshing fruits of the shrubs were exposed for sale, the colour of the two different varieties was as distinct as it was now found to be in the flower—the one dark red, the other of a pale yellow, approaching straw colour.

In the gardens the Indian tube rose was cultivated in plots. Some beds were variegated with yellow and red roses, such as have been already mentioned as being sold along the streets; and others were yellow with marigold, precisely similar to the spines used by the Hindoos as offerings to "Gunga Gee" when performing simultaneously their ablutions and devotions in the most filthy waters of that sacred stream.

Although at this time fruit had not arrived at maturity in the immediate neighbourhood of Tein-tsin, the appearance of a quantity of ripe apricots in the market on the 3rd of June showed clearly that there were at no great distance some orchards in which the trees were considerably in advance of those nearer that city. These apricots were stringy, and not particularly juicy; yet, as we had hitherto been restricted at dinner to pears, apples, a few grapes occasionally, chestnuts, throughout a great part of winter, and walnuts almost continuously, the new apricots were appreciated, perhaps, fully more than their intrinsic qualities merited.

Balsam plants, not more than four and six inches high, and covered with single flowers, were on the 5th of June sold in great abundance upon the streets, and at so cheap a rate, that we foreigners purchased a number at the rate of two shillings per hundred. I had afterwards many opportunities of seeing how they were cultivated in gardens. They were reared in beds, where the seed had been placed in the earth at intervals of about six inches, so that the young plants were afterwards easily removed with a sufficient quantity of soil around the roots to enable them to grow freely when planted.

The manner in which this and other kinds of fragile plants were removed from the soil deserves to be noticed. In consequence of the amount of tenacious clay with which the mould here is mixed, the surface of the ground rapidly becomes dry, rendering it extremely difficult, if not impossible, to remove one of the more delicate descriptions of plants therefrom without severely injuring it. To avoid this, the gardener turns upon

the bed, from which it his intention to pluck up by the roots or remove a flower or vegetable, one of the small water-courses which, as already mentioned, intersect, at short intervals and in almost every direction, whatever gardens or fields are under cultivation. The water is permitted freely to flow upon the bed, it being raised for the purpose, either from well or river, according to circumstances; the surface ground speedily becomes so wet as to become a perfect puddle, and while in this state, the field labourers or gardeners remove readily by the hand such plants as they wish; carefully pressing the mud around their roots while in the act of raising them.

By the 7th of June, the temperature had reached a minimum of 69°, at 9 a.m. it stood at 82°, and during the day attained a height of 98° Fahr., the atmosphere containing only thirty-five per cent. of aqueous vapour. Hitherto we have found that vegetables have made their appearance gradually; now, however, we were to have a complete influx of them. The advance of heat was rapid, so also was that of vegetation; so much so, that on the 9th of June, I had noted in my journal that fields of wheat had become so yellow as to indicate that the crops were ready to be cut down; cucumbers, melons of different kinds, French beans, kidney beans, peas, celery, lettuces, and country cabbage, the leaves of which taste like turnips, were found abundantly in the market. Millet was not more than six inches high, and vegetable marrow formed one of our commonest and, at the same time, our most favorite vegetables at table.

A longer than usual ride on the 12th of June brought myself and companions along the border of a field on which the crop was, were we to believe some of the famous advertisements of this day, the *Revalenta Arabica*, that plant which proved so inestimable a solace to many an old lady of either sex, and so large a source of profit to what in mercantile phraseology is termed "a certain party." The crop that covered this field was the *Ervum leus*, or, as it is better known in India, where this kind of seed most abundantly grows, "massoordhal;" and very sweet meat indeed does it make, precisely similar to what has, during many years, been familiarly known in Scotland under the name of "Glasgow brose meal."

Tamarisks of large size and in full flower were brought round

for sale on the 15th of June; and on this date both carnations and tube roses were in full bearing. The former plant occurs occasionally on the waste pieces of the plain, which, as already mentioned, extends southward from the Tein-tsin, a stunted-looking individual, shooting up its head here and there from among the grass. Three days afterwards, the large double lark-spur was exposed for sale, and really formed an exceedingly handsome and ornamental plant.

On the 20th, barley was being plucked up by the roots as ripe; for here the sickle was not used for this kind of grain. The weather had attained a heat quite equal to that of India; the natives, suiting the amount of their clothing to the temperature now, were as slightly clad, and more so than those of that country during the corresponding season. In the streets, the people were in general naked to the waist; some of the coolies wore a shade of white cloth round the head, securing it by twisting their tails around it; the better classes, however, wore nothing at all upon the head, merely shading themselves from the intensity of the heat by holding up the fan between their faces and the sun as they walked along.

It was a source of amazement to all how they escaped sun-strokes; the front part of their heads being clean shaven, the powerful midday rays struck upon them directly, but yet no evil effects seemed to arise. The contrast between the Chinese in this respect and our Seikh troops stationed here was remarkable, and not a little absurd; the one, as just remarked, wore no head-covering at all; the others, carried, twisted around their heads, many yards of cloth, as a turban or "puggery."

In the fields, away from towns and villages, the labourers sometimes dispensed entirely with clothing. It was a novel sight to see workmen, in a state of nudity, manfully using the hoe; nor was it only in the fields that garments were thus dispensed with. Boatmen, whether on the river or canals, were by no means seldom seen naked as when born, at their ordinary work, nor did they seem to heed how thickly crowded was the neighbourhood in which they were, nor who or of what sex were the passers by. Never before had I seen so utter a want of modesty as I now observed among the Chinese men, for the other sex is here remarkable for their modesty.

Large quantities of nool kool were now in a very advanced state of maturity. The peculiar tuber of these had attained a tolerable size, and was fit to be served up at table. In riding upwards along the left banks of the Peiho river, I was somewhat surprised to pass a field in which a few plants of potatoes were being raised. This vegetable does not appear to be in regular cultivation in this part of China, although it evidently is so towards Mongolia and Thibet. Probably, therefore, those few plants are the result of an experiment now in process of being made with a view of introducing it here.

The bean crops were fully ripe, and on the 27th of June I note that they were being cut down. Barley had for the most part been plucked up, and was now being beaten upon "thrashing-floors" prepared for the purpose, not far from where the crops had stood.

These thrashing-floors are, in some respects, like those we read of in Scripture; they consist of merely a space of ground set apart for the purpose, the surface of it being made smooth by means of beating and plastering with soft clay, which thus soon forms a crust upon the surface. The grain crops are here deprived of their seed by having a stone roller, about two feet and a half in length, ten inches in diameter at one extremity, and a little less at the other, moved round and round the floor, upon which the crop is spread. Sometimes the stone is pushed before a man, who for this purpose uses his feet, as we often see at home when a person adopts a similar method of rolling a cask before him. On other occasions, a mule, or a donkey, or a half-starved bullock, is yoked to this roller, and made thus to "tread-out" the barley. Unfortunately for these animals, the Chinese venerate Confucius, and not Moses; the consequence is, that whether the beast of burthen employed upon the thrashing-floors be an ox or an ass, he is always most carefully muzzled; a kind of flail is sometimes, although not often, used for thrashing corn, but the roller is much more often the only implement by which this is effected.

Melons, vegetable marrows, and various other forms of Cucurbitaceæ are now exposed for sale, a large globular form of brinjall or egg-plant, much larger than the common species of India, is also abundantly in the market, and common at table.

The plant which yields it is in itself ornamental as it grows in the fields; being not less than three to four feet in height, with large cordate leaves; the flowers also large, and even showy; the globes of fruit, which are not less than six inches in diameter, and of a dark violet, glossy hue, contrasting well with the dark green of the leaves from under which they hang pendant. Indian corn is sufficiently advanced to give us the opportunity of having the heads of soft green grain served up at table, being first washed, and then well seasoned with butter, salt, and pepper. These are general favorites wherever this crop is cultivated, and were extensively sold in the streets, where they underwent the process of washing, in the cooking-places that in Tein-tsin occupy every corner, and every recess sufficiently large to hold one.

Apples, not certainly quite ripe, yet very nearly so, were served up as dessert on the 28th of June. Grapes of last year, and those of the present, were also placed side by side, the latter were not fully ripe, but sufficiently so to be eatable. As I shall hereafter have occasion to describe the method of preserving fruit which the natives here adopt, I will now only remark, that here on this occasion the fruit of the past year and that of the present formed dessert together.

On the 3rd of July, I had occasion to observe that all the fields that had been sown with wheat and barley were bare, these crops having been removed. Indian corn (maize) was now three feet high, and common millet not less than two. In some places, extensive fields were green with melons, cucumbers, and pumpkins. Trellis work, covered with the twining stems of a species of dioscorea or yam, such as has been already mentioned, interrupted the evenness of the fields at long intervals; having the appearance when observed from a distance of so many hurdles erected preparatory to a horse-race; vines were now luxuriantly green, completely concealing by their rich foliage the framework of bamboos and branches upon which they were trained.

The temperature of the air attained its maximum between the 17th and 24th of this month. During these days the thermometer indicated during the day 108° Fahr., and the mean temperature of the whole was 96°. Alarming mortality oc-

curred among our men; and so great a degree of exhaustion was produced by the intense heat at this time, that it was a matter of the greatest difficulty to rouse ourselves to the exertions that were absolutely necessary. Fortunately for us this state of affairs did not continue long. On the 24th clouds arose, a storm of wind and rain set in, and thenceforward the temperature began to moderate.

August commenced very agreeably, so much so that an afternoon ride of more than seven miles was very enjoyable. The minimum of the thermometer is recorded as having been 62°, at 9 a.m. 77°; the degree of humidity in the atmosphere was 71°, the sky over-cast, cloudy, and threatening rain, a pleasant breeze blowing from west by north. It will thus be seen that notwithstanding the severity of the climate to which we had been exposed not more than a few days ago, we are now in the enjoyment of one that is not only bearable, but agreeable. The rapidity and the extent of climatorial changes are here very remarkable. It is this peculiarity of the climate that enables us to exist throughout the summer; for were the great severity of the heat such as we have lately had to continue throughout two or three weeks, it is not saying too much to assert that in that time our numbers would have been literally more than decimated by disease. These remarks, however, are only incidentally introduced here; my present object is to convey to my readers an impression of what is the appearance of the cultivated fields in this part of China, and what the nature of the crops that are there produced; yet the latter, although no doubt suited to the soil, are modified to a great degree by the climate; the remarks I have offered in regard to the latter, are, therefore, not inappropriate to the subject more especially in hand.

On the 1st of August I came upon the first field of the cotton plant that I have seen in this part of China. The field was by no means extensive, nor was the crop upon it luxuriant. The plants were however covered with a plentiful crop of flowers of a yellow colour, the mouth of the corolla bordered by a streak of orange colour, thus giving to it an extremely attractive appearance. In an emergency such as unhappily now exists, it is matter of great importance to have in view places where cotton

may be cultivated. Here, therefore, is one, where it might doubtless be raised in considerable quantities.

In one inclosure by which we rode along, tamarisks grew so thickly that we naturally thought they must have been cultivated for some particular purpose, although, if this was the case, we were unable to ascertain what the precise purpose was for which so unusual a crop was being raised. The whole of these, tall and short, were in full flower, the pink spikes contrasting beautifully with the bright green of the leaves of elegant shrubs. In another enclosure, several trees of the jujube or zizyphus were seen growing, their branches bearing an ample crop of still immature fruit. Millet covered immense tracts of field, and was now rapidly coming into flower. It is evident that this description of grain forms the staple article of food in this part of China, yet, in consequence no doubt of the comparative dryness of the soil here, the plant grows less luxuriantly than I have seen it grow in India.

For some time I had been of opinion that sugar-cane grew either about Tein-tsin, or at a very small distance from it; pieces of what looked like the stem of it were exposed for sale, and eagerly masticated by both boys and grown persons, precisely as is done in India. On further knowledge, however, it turned out not to be sugar cane, but the stem of the growing millet, which indeed contains so large a proportion of sugar in its composition, that if I mistake not, the manufacture of this from it has been attempted in Europe.

The absence of rice fields deserves to be mentioned. This description of grain, although extensively employed as food by the Chinese throughout almost all parts of the empire, is not cultivated in this neighbourhood, the soil probably not being sufficiently rich for it, and irrigation not sufficiently extensive. The greater part of what is consumed in the province of Pecheli is brought up by canals from the valley of the Yangtse, and, as elsewhere more particularly described, large public granaries for its reception and preservation occur on the banks of the Peiho at a distance of seven miles from the north-west end of Tein-tsin. Fruit had by the beginning of August become plentiful in the market. Melons of different kinds were extensively sold upon the streets.

Apples of several descriptions, peaches, plums, greengages, and grapes were now procurable in any quantity.

We had served up to us at table a description of dessert that, until now, was quite new to us; this was the peculiar shaped fruit of the nelumbium or great water lily, the general shape of which is very like that of the perforated head of the spout of a vessel used for watering plants. The nuts on being extracted and skinned have a flavour not by any means unlike that of filberts, and are evidently held in great esteem by the natives, who, during those months in which vegetation is dormant, seem to relish the roots of the same plant as much as they now do its seeds.

By the middle of August, the millet crop had attained a height of five feet and upwards; in some places crops of melons and of Indian corn of an early kind had been removed, the ground being in course of preparation for one of some other kind. Several heavy showers of rain now occurred, and a sensible moderation of temperature took place.

A break now takes place in my notes relative to the fields at Tein-tsin for a short time. My health having suffered considerably, I was under the necessity of taking a short trip by sea, which will probably be elsewhere alluded to. It was not, therefore, until the 7th of September that I renewed my walks and rides among the fields in the neighbourhood of that place. When I did so, I had the pleasure of accompanying Mr. Fortune, one of the most accomplished botanists, and, as regards the flora of China, the greatest authority of the day. I had unfortunately omitted to bring with me such books as would have enabled me to ascertain the names of plants with which I had been previously unacquainted, not having expected to have been stationed in this part of China; I was accordingly now dependent upon Mr. Fortune for the names of several of those that are about to be mentioned.

Having on the present occasion visited several of the nurseries already mentioned, Mr. Fortune found himself at once revelling among old and familiar acquaintances, regarding the habits, native quality, products, and relative value of which he favoured me with a running commentary as he passed on from plant to plant, astonishing the native gardeners by the readiness with

which he mentioned each shrub and flower by their several Chinese names. Here, as already mentioned, we found growing and in flower, the *Jasminium sambac* and the *Olea fragrans*, these being, as previously stated, two of the plants whose flower buds are employed to give their peculiar odour to certain kinds of scented tea; they are also employed extensively for ornamenting the hair of ladies, and for scenting the apartments of the wealthy during the winter, the flower buds being for this purpose collected in considerable numbers, and placed in an open saucer upon the table. Mr. Fortune mentioned that the flowers of a third plant, namely, the *Chloranthus*, are also used extensively in the preparation of scented teas, but no specimen of it was found in the nurseries visited by us on the present occasion. Growing wild and evidently uncared for, along the borders of these nurseries, and close to the millet straw fences by which they were surrounded, the tomato plant, with small, stunted fruit upon it, was observed, struggling as it were for life among what were evidently looked upon as other weeds; near it, and evidently as much neglected, we also came upon a plant of phyzalis or Cape gooseberry. Its fruit was of a more decidedly orange colour than that met with in India. On some future occasions, I came upon more of the same plant, but its fruit is evidently not esteemed by the Chinese, notwithstanding the delicious, subacid flavour it possesses.

Begonias were rapidly coming into flower, and a few specimens had actually opened, reminding me of several species of the same genus that shoot out their long and beautiful flower stalks from the crevices of schist and shale rocks, wet with percolating water from the overlying soil in and around the Himalayan stations of Simla. Sterculias, Bignonia, and some individuals of Magnolia were also met with in these nurseries, although not in large numbers.

One description of tree, for the name of which I am indebted to Mr. Fortune, bore upon it the peculiar tomato-like fruit which in its fresh state is esteemed a great delicacy at Hong Kong; and in this part of China was seen during last winter exposed for sale in a carefully preserved state, looking at first sight by no means unlike Normandy pippins. This was the *Dyospyrus kaki*, the fruit of which is known by the name of "pit simmon."

The manner of grafting trees had been already observed by me in this nursery. The operation as practised here is of the most extremely simple nature. The stem that is destined to receive the graft is sawn across, on one side a portion of the bark and even some extent of the wood is cut off in a slanting direction. The extremity of the branch about to be grafted is similarly prepared; the flat surfaces are brought together, some mud, perhaps secured by a piece of dirty rag or a little grass, is applied, the whole secured by a string; and thus the process is complete. It does not appear, however, that the Chinese have even yet discovered the more elegant art of "budding." One curiosity in the way of grafting deserves to be mentioned. In this nursery I saw this operation successfully executed between a cypress and a juniper; two branches while still growing, and without having been lopped off from their respective stems, had been bared at the side, the two even surfaces were then brought together, and secured in the manner already mentioned. Union had taken place, and the two kinds of shrub grew fresh and green from the point at which they were united.

But the plant which Mr. Fortune seemed to prize most highly was one of the genus "Forsythia." He had already introduced into England at least one species of it, and now he came upon one which he was inclined to think had not hitherto been described. Strange, however, as it may seem, the shrubs that were mostly valued had all been brought from the south of China. A flower, like a prophet, or like many a man of more ordinary stamp than a prophet, although still superior to the ordinary run, has no honour in his or its own country.

These shrubs, somewhat numerous and various as they are, are by no means all that we now had an opportunity of examining. Fig trees of considerable size grew in pots; there was no fruit upon them, nor even at a somewhat earlier period of the season, when a few figs appeared exposed for sale in the market, did they seem to be of more than the most ordinary quality; we are, therefore, left to presume that this particular kind of fruit is but little esteemed, and consequently little cultivated here.

Not only in these nurseries, but in some of the enclosures around temples, other ornamental shrubs besides those mentioned were found growing more or less abundantly; thus, that

extremely ornamental one, the largestræmia is here a very great favorite, although, perhaps, not quite so much cultivated as in India; hydrangeas are also evident favorites in this part of China. Vitex forms a common genus here. Convolvuli and japonicas ornament the fences with their elegant flowers; the Lawsonia or *mendhee* of India gives out its delicious fragrance to the evening air as in India. Oleanders are by no means uncommon; and occasionally, while passing through the neighbouring villages I have seen a sirrus, and what appeared to be an acacia of some kind, although being without flowers, it was not possible to identify even its genus. Camelias, the flower buds of which were now half mature, were evidently looked upon as perfect treasures by their possessors; so were a few azaleas which we met with; nor must I omit to mention one solitary plant of "boxwood" that we came upon, carefully tended in a nursery.

By this period of the year, patches of buckwheat, that occurred at long intervals near some of the native villages situated upwards of four miles from Tien-tsin, were in full flower; the plant was not eighteen inches in height; the white flowers of it covered completely the plot of ground upon which it grew, concealing the yellowish-green leaves of the plant. Other fields where white with flowers of shalots of different varieties; the latter giving to the places covered with this description of crop a very beautiful appearance, although in this instance it was decidedly distance that lent enchantment. Nearer approach enabled the pungent odour of the garlic and onion, in which the Chinese so much delight, to make an extremely unpleasant impression upon our olfactories.

In the more immediate neighbourhood of the river and canals, immense tracts of land had been, and still were, covered with the jute plant or *corchorus*. This is a member of the mallow natural order; grows to a height of ten feet and upwards when cultivated and well supplied with water by means of irrigation; otherwise it remains not more than a foot or so in height, and every way stunted in appearance.

To obtain the bark, from which the fibre is taken, the plant is steeped in water, generally in canals or in pools prepared for the purpose. After a little time, the skin is as readily run off

as is that of osiers, which undergo a similar process in England previous to being sent to the basket-maker. The jute in its rough state being thus removed from the stem, it is packed up for sale; the stems being carefully dried, and then put up in large bundles to be converted ultimately into firewood. Indeed, were it not for this material, and the stalks of millet from which the grain has been removed, it is difficult to conceive what would become of the natives for fire during the long cold days and nights of their dreary winter. Coals that are obtained from near Pekin are not only very inferior in quality, but so expensive that comparatively few natives could afford to use them. There are few bullocks in this part of China, and scarcely any cows at all, consequently the description of fuel to which M. Huc gives the name of argols, is not obtainable; in fact, were it not for the materials just stated, the inhabitants would be left without fires.

It is well known that the sauce called soy is a product of Chinese manufacture. Some very odd ideas, however, are entertained in respect to the constituents of it; indeed, so implicit a belief exists among many persons in England that cockroaches form a chief ingredient in it, that perhaps this circumstance forms one reason why it is by no means popular at table. It is not made altogether of cockroaches, however, although possibly an occasional stray insect of this description may get into the vats and jars during the process of manufacture, as flies, beetles, or even more objectionable creatures than these do into vats in England. Soy is a product of the soy bean, which is a species of dolichos, and is somewhat plentifully cultivated hereabout; its short, rough, and hairy pods, and phaseolus-like leaves at once indicating the plant.

An occasional field of sesamum is met with also. This description of crop is now for the most part in seed; some of the digitalis-like flowers of it still remain, reminding me of the same plant, which is extensively cultivated in India, and for the same purpose that it is here, namely, for the fine oil which it yields. This is much used in Chinese as in Indian cookery; and my readers will, no doubt, remember that the plant is said to have been cultivated for the same purpose in the days of the patriarchs.

On the 9th of September I observed for the first time a few plants of tobacco in flower. These were cultivated in gardens, but apparently for no other use than mere ornament, as their number was very inconsiderable. We may, indeed, presume that the soil here is too dry for this particular kind of "weed."

It may seem strange that in a place where so much opium is used, as is the case in this part of China, no poppies seem to be cultivated. No doubt the soil is unsuited to them; yet not only does the opium poppy grow in some parts of China, as, for instance, in the Shansi province, and near the higher parts of the Yang-tse; but opium is now, as already mentioned, coming to be manufactured in China to an extent that is calculated to interfere very seriously with the Indian market.

On the present occasion Mr. Fortune pointed out to me one of the most common trees that grow in this neighbourhood, as being the *Sophora japonica*, from which is obtained the supposed "green indigo," that was some years ago believed to have been discovered. The tree in question belongs to the leguminosæ. It varies from twenty to twenty-five or thirty feet in height; its branches are spreading, but in one variety droop elegantly from a common centre, after the manner of the trees to which the appellation of "weeping" is usually added. According to my talented companion, although this tree does not in itself yield a green dye, its flower-buds have this peculiarity, that when dried, and afterwards infused in water, a cloth that had previously been coloured blue by indigo acquires, on being macerated in the liquid, a beautiful green, which is the more valued because permanent. He also mentioned, while discussing this subject and the alleged fact of a permanent green dye having been obtained from a rhamnus found in China, that two species of this genus produce actually by themselves two different colours; the one a purple blue, the other a yellow, and that by a combination of these the green, as already mentioned, is obtained.

By the 14th of September some of the fields had been cleared, re-manured, and were now in progress of being sown with wheat. Thus I have had it in my power to note the precise dates upon which this grain had in spring been placed in the ground, and now I have had the satisfaction of recording the earliest date

upon which the seed of what is called the autumn crop is committed to the earth.

What are called by some Pekin, by others Shantung cabbages, are now about half advanced to maturity. Green radishes are also well forward, and turnips have thrown out leaves of considerable size, although as yet the tubers have not begun to form. The large yellow flowers of the helianthus are now objects of striking appearance, rising high above the vineyards around which the plants have been reared for the sake of their seeds, which are highly esteemed by the natives, and are said to be very palatable when eaten. Celery is abundant in the fields; fennel is now begun to ripen its seeds, but is only met with in two places in this neighbourhood. A few stalks of maize, evidently of a late kind, are still met with in the fields, and their heads of grain, yellow, although immature, are exposed for sale in the streets. Ditches and hollows are more or less completely filled with water after the heavy rains that have in the early part of this month taken place. A green layer of duckweed or lemna covers these in some places, moving from one part to another according to the shiftings of the wind, and growing from the slimy bottom of others. Tufts of aquatic plants grow abundantly, looking like those we meet with in similar localities at home. The larger trees are still fresh and green as ever. The moderate temperature incites people to take long rides and walks throughout the day, and sportsmen begin to meet with snipe and quail in their country rambles.

It may not be considered out of place if I mention that on the 16th of September we had at table new potatoes, brought down, as we were informed, from Tartary. These had the same delicate flavour that is so much appreciated at home when this most useful tuber first makes its appearance, and in every other respect seemed to be of most excellent quality. I have elsewhere alluded to the fact that only a few plants of this vegetable have as yet been seen in this neighbourhood; but there appears to be no reason why, with a little trouble, it might not be cultivated here.

Pomegranates at the same time appeared in the streets, looking not only completely ripe, but of most excellent quality; these were the produce of the nurseries, where, as already

mentioned, they were cultivated in pots; the shrubs being moved within doors, and preserved in conservatories during the severity of winter.

By the 18th of September the climate had become so bearable, that with a view to convey an idea of it, I observe that the minimum point recorded on that morning was 58·5°; at 9 a.m. the thermometer stood at 68° Fahr.; the per-centage of vapour in the atmosphere, complete saturation being represented by 100, was 75. A gentle breeze came from the north-east; the sky was clear and almost cloudless.

Considering my residence in this part of China now drawing to a close, I took a longer than ordinary ride across the fields, noting as I did so a few of the plants whose names I had not previously recorded; yet even now, it is not to be supposed that I can notice more than a very small proportion of the genera that constitute the flora of this part of China. On the uncultivated fields chenopodiums, or goosefoot, grew more or less abundantly, according to the moisture that pervaded the locality; one kind, namely, a silvery shrubby-like one, being an exception to this, and selecting apparently the very driest banks for its site: as members of this order the plant commonly called cocks-comb is to be enumerated; it, and an inferior description of beet, were occasionally seen growing within the borders of gardens, and these had already begun to show signs of autumn upon them.

In the immediate neighbourhood of the river, where the common British species abounded, it was in many places completely covered by a cuscuta or dodder, the long white tendrils of which encircled almost every stem and twig of this particular plant, but not spreading to those of other kinds. Calamus, or sweet flag, typha, and sparganium, grew in a few of the marshy places near the irrigation canals, but the greater number of these were crowded with the arundo, which excluded all else. On some of the waste lands grew a species of asclepias, whose long twisting stems entwined themselves around whatever they came sufficiently near. This plant looked, even from a short distance, like a species of bitter-sweet; but its flowers, and the milky exudation from its divided stem, at once indicated its true nature. Another plant that grew abundantly on the waste lands

I mention here, because its specific name has been given in honour of the gifted gentleman in whose company some of my most pleasant walks have been taken; this is the *Statice Fortunii*, one of the genus to which belongs the beautiful British wild flower, the common thrift, whose pink coloured and rounded heads of flowers form not a little attraction in our walks along the sandy banks of some of our most charming Highland streams.

One other plant will only be noticed in this place; the names of a few more that were seen in the course of my present ride are noted at the foot of this page.* The plant which deserves more than a passing mention is a species of sonchus or sow thistle; it grows here abundantly, its yellow flowers frequently appearing from some ditch or small excavation as we pass along. In the early part of spring, that is, so soon as vegetation had begun to break the surface of the ground, the young shoots of this particular plant were eagerly sought for and abundantly brought to market, on account of their long roots, which having an agreeable bitter, were much relished both in their raw and cooked state by the natives.

Large quantities of beautiful asters ornamented gardens at this time, their many bright colours giving to the flower-beds in which they grew a really brilliant appearance. In some places, what appeared to be young plants of the same kind were being cultivated, for the apparent purpose of being taken within doors, as ornaments during the winter. In others, chrisanthemum plants had already attained a large size, although they were not yet in bearing. In others, amaranthus, or "everlasting," grew in large masses.

The general aspect of the country had now become so different from what it had been during the preceding winter, that I was tempted to note a few of the more prominent respects in which

* Vicia, of more than one species; an astragus; salsola, growing in marshy, saline localities; procumbent euphorbium of a bright green and red species, occurring in old French bean fields; lyntim, a plant very similar, at first sight, to berberis, and like it, often forming part of hedges; senecio, and small wild asters; *Leontodon taraxacum*; and lastly, a species of the "blue bottle," commonly met with in marshy woods, in Scotland. A species of rubia grows in the hedges; pinnex and plantago in marshes, and day lilies plentifully in gardens.

the great extent of change had taken place. Now, with the exception of a few tracts of land apparently left fallow, in order to yield pasturage, and a few of comparatively small extent that are so impregnated with salt as to be utterly barren, the country for many miles forms one continuous expanse of cultivated ground, covered more or less completely with growing or with ripening crops. So tall is the millet, that in travelling along the narrow roads that intersect the fields under this description of crop, a rider, even upon a tolerably tall horse, cannot often look over the crop by which he is surrounded; consequently, some little amount of care is necessary in noting the precise paths by which he prolongs his ride, if he wish to avoid the chance of losing his way and getting benighted.

The grass that covers some of these meadow lands is, when cut and dried like hay, extremely sweet, its scent very similar to the vernal grass of England; with it is mixed the particular kind which, when preserved and submitted to the necessary processes, yields the straw from which mats, and certain kinds of hats are manufactured. The *Carex lachryma*, or "Job's tears," for such are its ordinary names, does not grow here in the same abundance that it does in the south of the country, but is sufficiently abundant apparently to repay a few persons, while the trailing stems of it are green and fresh, to collect them for sale.

The first birds in progress of migration were observed on 23rd September; they were wild geese, commencing their southward journey, preparatory, no doubt, to the cold of winter setting in with violence, from which they are effecting their escape. In regard to vegetables, turnips, as large as ordinary eggs, were now brought to market; carrots, not so large as those at home, and far more insipid, were also freely sold. The latter vegetable had indeed been frequently observed by me growing in beds in the fields, but I had omitted to mention it in its proper order.

Taking a long excursion into the country, chiefly along the left bank of the Imperial Canal, I had an opportunity of observing some fields of wheat that had lately been sown, now showing the young plant, or *breer*; a few stems of the Indian corn still held out upon the fields. On climbing to the summit

of an old tower that had originally been erected many years ago for the defence of the river and approach to the capital, I was able to obtain an extended view of the surrounding country. It was unquestionable that the hues of autumn had already begun to fall upon the greater part of the crops by which the fields were covered; the bright green of summer had faded, and now, with the exception of the patches covered with crops of succulent vegetables, all others looked "sear and yellow."

Growing wild in some of the hedges in the neighbourhood, I had frequently remarked a species of hop; on one occasion, Mr. Fortune had inquired of the natives whether it was converted to any use by them, and the reply he obtained was in the negative. I had carefully watched the progress of the plant to maturity, and was struck with the fact that, when ripe, its heads possessed much of the peculiar bitter flavour that characterises the plant at home. Here it flowers in August, and by the commencement of October is ripe; it might, therefore, be matter for consideration whether it might not in the course of a very few years be found a profitable article of trade. The Indian hemp plant had often been met with also during the season, but no use is made of it by the natives; possibly it does not here possess the properties which in India give to it its value, for we know that in the case of both animals and plants, some that have extremely obnoxious qualities under one series of conditions, whether of climate or locality, lose them more or less completely under others.

So also with stramonium; a few plants of it are occasionally met with in the neighbourhood of Tein-tsin, but were the fruit here as pernicious as it is in India, for example, we may presume that it would be found in much greater abundance than it is. Having had occasion to proceed to and return from the mouth of the Peiho in a gunboat, I had an opportunity of observing the appearance of the country along the banks, throughout the thirty miles and upwards that intervene between Tein-tsin and the sea.

In some of the fields labourers were at work cutting, or rather striking down the lesser kinds of millet. The implement used by them for this purpose was not unlike one of our ordinary sickles, and they seemed to level the crop very rapidly with it.

Much of the greater millet had disappeared, and what little remained appeared to be perfectly ripe. The foliage of the trees still retained the fresh green of summer, but all else showed the tints of autumn. In some places the crops of reeds that occupied the marshes had been removed, and in those where they still stood, they, like the field crops, appeared ready to be cut down. In a few fields, not only had the crop been removed, but the plough and sowing machine were at work, laying down the seed of the succeeding spring crop; but over the greater space, the surface was covered with the varying green of radishes, "cabbages," turnips, and nool kool; an occasional patch of the red tops of the beet, showing out bright by contrast.

Although not exactly connected with fields and agriculture, the preservation of fruit by the natives of the north of China is considered to be a subject of sufficient interest to justify a brief description of it here. I have in the preceding notes recorded the different stages of some of the field and garden produce from the time that the seed was committed to the earth, or when the young plant first appeared above ground to its fructification, ripening, and final removal; I trust I may, therefore, give a short notice of the manner in which some of the products are preserved from decay.

The place of this description which I visited consisted, in the first place, of a large oblong square excavation in the ground, to a depth of not less than twelve feet; the breadth was not less than forty, and the length not under three hundred; a roof made of layers of reed covered up by mud protected the whole, the ridge being from the floor not less than thirty feet, the eaves projecting well over a raised embankment from the surface of the ground of not more than three or four feet, thus rendering the enclosed apartment perfectly "tight," except as regards its door, and a range of three or four ordinary ventilators along its roof. The floor of this large apartment, which was formed originally of the clayey soil, was slightly inclined, so that moisture, formed by the water which might percolate from the ice employed in preserving the fruit, should accumulate in a small reservoir prepared for it at the foot of the declivity, and from whence it might readily be baled out through a drain, in the

same manner as water has already been described to be raised for irrigation.

On entering the immense "pit," the outline of which has been roughly described, we found that a deep layer of solid ice covered the floor; fruit of various kinds, more particularly grapes, peaches, apples, and pears, were being, or had already been, packed in strong wicker baskets; each of these was of a diameter of two to two and a half feet, and of about the same in height, a thick layer of matting lining them internally; the top, which also consisted of strong wicker work, was only separated from the contents by a layer of straw; it was then screwed on, and over it a mat was placed.

On either side of the wide apartment a range of wooden labels, on which were Chinese written characters were rudely stuck into the earth constituting the top of the excavation. We observed that in straight lines between these tickets, baskets containing a particular kind of fruit were placed. Each row as they were placed were successively covered up by a layer of ice. Over this another row was about to be placed; a layer of straw and rubbish separating the top and bottom of each basket from direct contact with the ice. Thus, as we were informed, layers of fruit and of ice were placed alternately, so as completely to fill the apartment; and so well is the fruit preserved, that according to the account given by the proprietor of the pit, it was only during the bye-gone month that the last of the fruit of the previous year had been expended.

Another object of interest deserves a passing notice, namely, a manufactory of sesamum oil. I have already mentioned that this seed is grown tolerably extensively here. I had an opportunity on 5th of October of observing the process of extracting the oil from it. The general internal arrangement of the place in which this was done was not unlike that of the place already described as that in which flour was in process of being obtained.

The general steps through which the sesamum were passed may be very briefly described. They were in the first place collected, and soaked in water to a certain point, then placed in a shallow cast-iron vessel, when, over a fire kept up by millet stalks, they were parched. Being taken from this, they were

ground between two "querns," revolving by *donkey* power, as mentioned in reference to the process of grinding wheat.

A dark drab-coloured oily matter distils down the sides of the stones as the process of trituration takes place. This is collected and placed in a second shallow iron vessel over a fire; it is then violently beaten and agitated until, under the combined influence of this operation and the heat to which it is exposed, the oil rises to the surface. The oil is then collected, further purified by being again agitated, and heated in vessels. The refuse is carefully collected; it is a valuable article of manure, and is carted away in buckets placed upon wheel-barrows to be converted into the extremely offensive matter which, when mixed with other descriptions of compost, it proves.

The purest kind of the oil is used in cookery for the rich, or in the best description of eating houses; the next quality is employed for a lower class of persons, and the inferior kinds are used in lamps, where, with the pith of a rush, it is made to afford a very tolerable light.

An oil manufactured from "ground nuts" (*Arachis hypogea*) is also prepared here; this peculiar underground pea being common in the markets, although during all my excursions among the fields I had not met with any of the plant in progress of cultivation. The parched grains of it are eagerly eaten by the natives, and to some Europeans are by no means unpalatable as dessert.

Among the last of my excursions through the town of Tein-tsin, I had occasion to observe that on 8th October bulbs of narcissus had not only been planted in vessels partly filled with water, but that some of them had actually thrown out their first leaves to a height of not less than half an inch. It is to be supposed that throughout the intensity of the cold weather, which is now so soon to occur, these will be carefully protected within doors, where, in the warm temperature of the towns they will in due course progress, so that with the returning warmth of spring their beautiful and sweet-scented flowers may be among the earliest indications of that pleasant season.

Such then is a general view of the varying aspect of vegetation according to season as recorded by me from time to time, and such a few of the remarks that present themselves as I write,

in reference to various subjects more or less intimately connected therewith. The 9th of October was an extremely agreeable day in more respects than one. The temperature during the preceding night had descended to 42°; at 9 a.m. the dry bulb of the thermometer indicated 57°, the wet 46°; the wind came from the north with tolerable power; the sky was clear. During mid-day the sun was hot, yet not sufficiently so to render walking unpleasant. In the early afternoon the breeze still prevailed; the degree of dryness to the sensations being sufficiently great to affect unpleasantly the chest.

Under the impression that this would be the last date upon which it would be in my power to take a long walk through the fields in this part of China, I started tolerably early in the afternoon; and taking a stroll of some three miles along the parts nearest the river, and consequently the most readily fertilised by irrigation, I resolved to note as I proceeded, the various crops, as well as the other matters of agricultural interest which met my view as I proceeded.

In the more marshy patches along the side of the river, and close to the extempore docks that occur at intervals near the town, immense crops of reeds had grown; these were now all cut down and removed, the spaces that had been covered by them looking brown, bare, and as if already resigned to winter. Of small millet, there remained none upon the ground; patches of the larger species were still standing; the brown hues of autumn had begun to colour them; and as I passed close to the fields, I observed that many stalks, no doubt those that had become ripe, had been cut off, leaving a stump in the earth of four or six inches in height.

Along the borders of some fields, and of almost every garden, huge sunflowers reared their big round heads high above fences and crops. The seeds of these were not yet fully ripe, but were found on close inspection to be fully formed, and thickly packed together in their natural receptacle. A few plots of earth were ready prepared for the reception of seed, although for the particular description for which they were intended it was impossible to ascertain. Other similar plots had been evidently sown with spinach; for the young plants of this winter favorite had shot up their two oblong leaves to a height of an inch or two, and in not

a few places this very useful vegetable had attained a stage of maturity in which it was being cut down and prepared for the market.

By far the largest extent of land was under cultivation by Pekin cabbage which, to judge from present indications, is decidedly the great stand-by in the way of vegetables for the ensuing winter. On coming to a village, I observed an underground apartment, such as I have elsewhere described, being prepared seemingly for this vegetable; but connected with the roof were what looked to me like a couple of chimneys composed inside of millet stalks, plastered outside with clay, and therefore one would think extremely likely to take fire; whether these chimneys were meant to convey smoke from fires in the interior, or whether for purposes of ventilation it is impossible to determine. I can only presume that the former is the intention with which they are placed where they are.

Turnips with very small tubers and very large tops were plentiful. In some places there grew what had all the external appearance and taste of turnips in so far as leaves were concerned; but whose roots were of a long shape, extending into the earth to a distance of some six or eight inches. These were for the most part white, with a green circle on the rind towards the stem, but in no other respect resembling radishes. In other places grew what seemed to be turnips, altogether destitute of tubers. The leaves were not less than two feet long, narrow, of a dark green colour, and having a remarkably succulent stem. The general appearance of this vegetable was very familiar to me, for I have on many occasions seen it pickled or salted, and extensively used by the natives. Shalots and leeks were found in the fields in all stages of advancement; at one part the young crop had just begun to break the surface of the soil. At another, the withered flower stalks that remained since summer showed that there had been some negligence as regards their removal; and in others the crop was in progress of being taken up with a view to be sent to market.

Vines, as they hung upon their now half-broken trellis-work, looked brown, from their leaves taking on autumnal hues, although some fresh green shoots continued to wave in the breeze, as if in utter ignorance of how very soon they must be

lopped off or placed under the sod, in order that they may live again in spring. French beans, although for the most part now thrown more or less completely on the ground, still continued to bloom nevertheless; and, indeed, their fruit is nightly served up at mess.

A few small plots of ground were under cultivation with an umbelliferous plant. It was still in its immature state, not more than eight to ten inches high, of a peculiarly powerful and offensive odour, and, so far as I could form an opinion at the time, was a species of coriander—one of the plants that had covered some plots of ground early in the season. Celery occurred in all sized beds, and in all stages of advancement, from three or four inches high, to the plant in as perfect a form as the want of knowledge as to its cultivation by the natives permits it to attain; were they taught the simple act of planting the celery in "ditches," and bleaching it as done in England, this delicious vegetable would attain to a great size in this part of China.

On numerous small, oblong, square pieces of the fields autumn wheat, sown in rows, had attained a height of two and three inches, looking still beautifully fresh and green; a few of the fence-like trellis-walls for the long creeping stems of the dioscorea or kind of sweet potato, grown here, still stood, although only half erect, the leaves and stems looking as if the days of their youth had gone. A few plants of the brinjall had evidently been saved in order that their fruit might mature its seed. These were of the early and large globular kind; others, however, were green and flourishing; these were loaded with what is evidently the later variety of the fruit, it being of an oblong form, much smaller in size than the former, but of the same bright, glossy, blue colour, that it possessed in its early state.

On other portions of the field patches of annual capsicums still grew fresh and green, as in the earlier parts of the season; these capsicums were of both a long and a globular form; the former at first green, but becoming red as they approached a state of ripeness; the latter were at first green, and subsequently assumed an orange tint. The stems of the old plants of both these descriptions of solanaceous plants, namely the brinjall and the capsicum, were in some places being dried, evidently with a

view to be converted into fuel; we all know, perhaps some of us from practical experience, what is the effect produced upon the inmates of a room when red pepper is thrown upon the fire: I wonder if any similar result accrue from combustion of the dried capsicum stems. One small plot of ground, not larger than about twenty feet square, had upon it, as a crop, a plant of the wormwood genus, apparently being cultivated for medicinal use, or to be preserved in a dried state throughout the winter; another miniature field of even smaller size than this had upon it a crop of horehound, which was also apparently being raised for a similar purpose; and, growing among some shrubs in a small garden in the heart of a village through which I passed, were a few individuals of the castor-oil plant.

Growing from the sides of some of these cross pathways, and so situated as to be continually moist by water in progress of being conveyed along them, were several iris plants, their flowers long since faded, but their leaves still fresh and green as ever; and in one particular place grew a natural fence, for the evident purpose of protecting from the cold north winds of winter whatever crop of a delicate kind might be sown there. The fence consisted of willow-twigs, that had in early spring been planted close together, and had now attained a height of not less that ten feet; thus they were well calculated to serve the purpose of millet-straw fences, which, as elsewhere mentioned, were during last cold season very generally used to protect the crops from the severity of the northern breezes.

Radishes, in different stages of growth, and of various kinds, were met with, and some plots of ground were being prepared for the evident purpose of receiving the seed of more. The kind most abundant was unquestionably the large green one, which grows to a height as much above the surface of the ground as it does below it. This species is an immense favorite with the natives; they preserve the tubers or roots during the winter by putting them into deep pits, and then covering them up in a manner precisely similar to that adopted in Scotland, with a view to preserve turnips and potatoes for spring use. The red variety is less abundantly met with; a third variety is pure white, with only a faint flavour of the radish; and another variety that was still young, appeared to be altogether destitute of edible

root, although its spreading, dark green leaves had all the character of those of a radish. The only other cruciferous plant which I met with during my excursion, was the nool-kool; this I have never met with actually growing in beds, it has always been found being raised from the sides of the irrigation water-courses that intersect the fields, a free supply of water being no doubt necessary to enable it to develope the peculiar thickening of the stem in which its value consists.

Passing through some villages I came upon a couple of men employed in grinding millet. The seed had been placed in a deep conical excavation in a large block of hard, carbonaceous stone, which stood in a kind of square, as if intended for the use of the entire village. One of the men, by means of a mallet, the head of which was lengthened so as to suit the depth of the place in which the grain was placed, was engaged into hammering it into meal. The meal, with which the husk was mixed, had a pink colour, appeared moist, and had much more the appearance of a kind of bran-mash, than of the material from which the daily bread of a people was about to be baked. In two other places, I observed the finer kinds of grain being converted into meal; this is done in regular mills, but in mills that are moved neither by the power of wind or water. In a large native building, two or more grinding machines occupy different parts of the floor. These consist of the "nether millstone" securely fixed in a basework raised to a height of about a couple of feet or more; the upper millstone is made to revolve upon this by means of an axle, from which a cross-bar extends, so as to permit a donkey or a mule to be yoked in it. A conical-shaped vessel, placed above the upper millstone, contains the "grit," permitting it to escape at a regulated rate through the summit of the inverted pyramid; the grain is admitted through an aperture in the centre of the stone in much the same manner as it was formerly, or may be still where the ancient quern remains in use; and thus, night and day, by means of relays of animals, the work goes on. At one corner of the apartment, most frequently near the door, the process of cleaning the flour or meal from the husk is affected; a number of upright posts form a framework, by which a kind of sieve, secured all round by heavy woodwork, is slung; a receiver for the grain is placed

beneath, and the person engaged in this kind of work, remaining in a half-sitting posture, with his elbows supported by means of a bar, slung, for the purpose, works by his feet a kind of crank, from which connecting ropes extend to either end of the sieve, so that as he depresses the crank to one side the sieve moves that way, and so, also, to the other; the passage of the flour through its apertures being accelerated by the simple process of its being made to impinge at each movement against one of the end beams. This, worked as it is by the natives, with very great energy, sounds, at first like the continual click, click, of an ordinary mill, such as we come across in excursions along some of the more retired glens of Scotland.

On my way returning I passed one solitary field of soy bean; the crop upon it was more than fully ripe; that from other similar fields had been all removed.

Although not directly connected with farms or farming, I note that this evening, just as the sun was approaching the horizon, a flight of swallows suddenly appeared over head. As elsewhere noted, I had seen none of this genus since the 2nd of this month, on, or prior to which they must have migrated from here. The swallows that now appeared were evidently confused; their flight was irregular, and, as if uncertain, every now and then an individual would utter its soft and delicate note; indeed, it was this that drew my attention to them first; and as they disappeared in the distance, their general direction appeared to be the west and southward.

When returning home another flock of birds in migration swept with rapid and noisy flight over my head; a long horizontal line seeming to make towards the east. These birds were easily recognised as the pterocles, or sand grouse, that, during the cold weather, become extremely abundant in this neighbourhood.

A few remarks in regard to the aspect of the fields during the months of October and November occur in the meteorological reports, given in their fitting place, to which the reader is referred.

CHAPTER VII.

ZOOLOGY OF TEIN-TSIN.

Remarks on some of the animals met with in and near Tein-tsin, and on the sources of furs.

In the remarks that are about to follow, I do not pretend to give more than a general and superficial idea of some of the animals most frequently met with in and near Tein-tsin.

As already mentioned, I had unfortunately taken with me no books of reference, as, at the time when I left England, I had no expectation of having had to remain in China so long as I afterwards found that I had to do. This I deem necessary to reiterate, in order the more clearly to indicate that the sketch which I now propose to give, has no pretensions to a scientific account of the zoology of this part of China.

In order that I may include the various animals that I had noticed according to some classification, and thus the better ensure those of similar natures being included together, I propose to follow the order laid down in the majority of works devoted to this department of natural history. This plan, if convenient for the sake of description, has this great disadvantage, namely, that in following it, I have to begin my remarks by bringing before the reader some of the most loathsome of creatures. The first of these is a class of so called worms, or entozoa, that inhabit our own bodies, living in, and deriving their nourishment from the fluids contained within the intestines of man; of these the tape-worm is by far the most common, its germs being no doubt imbibed in the water from the river, into which, as already stated, filth the most loathsome is continually being thrown. Masses of similar filth lie about upon the streets, pigs prowl about, devouring whatever they can find; pork is

pretty generally used as food by the people, and thus, no doubt, this loathsome creature becomes introduced into, and developed in the human body. Among our soldiers its frequency was so great, especially during winter, that attention was pointedly drawn to the circumstance. Another entozoon, namely, what is called the large round worm, is common here also, but less so than the former.

Leeches are abundantly found in a series of lakes and marshes situated about ten miles from Tein-tsin, to which officers went during spring and autumn for the purpose of shooting wild fowl. It is strange that these useful *annelides* have not been made use of by the native Chinese, some of whom expressed surprise when informed of the purpose to which in European surgery they were put. Of the crustaceans met with, the numbers are few, and comparatively unimportant. Shrimps and prawns are caught tolerably abundantly in the river, but are in flavour far inferior to those obtained in England. Like fish, those from the sea are in flavour far superior to those from the river. One species of crab is very abundant in Tein-tsin throughout the summer and autumn. It is comparatively small and thin, having at either side a prolongation of the shell horizontally, running to a point, so as to form a very imposing spine, calculated, one would think, to inflict a severe wound. These crabs are brought from the Gulf of Pecheli, where it is said they are caught in inconceivable numbers. They are hawked in basket-loads along the streets, and sold in the pickled state as well as fresh. Their venders seem apparently to consider that they and locusts are "birds of a feather," else it is difficult to conceive the reason they have for exposing crabs and fried locusts for sale at the same stall, as is the case during the early part of autumn. I have not met with any land crabs here; the soil is, doubtless, not only too dry, but of too clayey a nature for them.

During the dreary winter in this part of China insect life is dormant. It was not until the 19th of April that flies, these most common of all insects, began to move about our rooms, and even then in a slow, inactive manner. By that time the temperature had become so moderate that the lowest during the night was only 55°, and at 9 a.m. 59°. We may presume,

however, that insect life here takes longer time to recover from the torpidity of winter than is required in the more favoured climate of England.

With the rapidly increasing temperature of summer, the numbers of flies increase; the decomposition of heaps of ordure and refuse of every kind that crowd the streets, the walls, the out-of-the-way corners, in fact everywhere throughout the city and its neighbourhood, favouring the development of maggots into the perfect insect; at least, during the month of July, and the early half of August, the myriads of these insects that crowd the table, and alight upon any part of the person that may happen to be exposed, constitute a plague only inferior to what we learn happened to the obstinate Egyptians. It was not possible for us to forget the nature of the places and objects upon which these unwelcome visitors might have rested shortly before alighting upon us, or, as they often did at breakfast and dinner, getting upon the morsel as it was about to enter the mouth. And this knowledge added much to the many other unpleasant impressions made by these tormentors. Mosquitoes* and sand-flies were later of appearing than flies, but during the latter part of summer were great nuisances; the mosquitoes by far the greater of the two.

So late as the 30th of May, although the temperature at 9 a.m. had reached 73° Fahr., I noted the fact that these insects, so tormenting in India, had not yet made their onslaught, and I congratulated myself accordingly. They rapidly increased in numbers, however, as the crops in the fields grew up. *Clouds* of mosquitoes took shelter in them; the surface of water that had been for some time neglected, was literally alive with their young; and so great were the numbers that assailed

* I may mention under the form of a foot-note, that Mr. Fortune in his 'Residence among the Chinese,' describes the composition of a kind of tapers, which, when burnt in the room, are effectual preventives against mosquitoes remaining in it. According to this author, there are three kinds of taper of this description. The first, consists of pine and juniper sawings, worm-wood leaves, and tobacco leaves, reduced to powder, with a small quantity of arsenic. The second, consists of long bags of paper, say half an inch in diameter, and two feet long, filled with the sawings of pine or juniper, mixed with a small quantity of nuwang (an unknown mineral) and arsenic. The third, is made of the wood of *Artemesia Indica*, but this gives out smoke, which is not agreeable to Europeans.

a person when walking among the crops so late as the 20th of September, that I noted the fact in my journal.

These are not the only insects by which annoyance was occasioned, not only out of doors, but also within our houses. Such are the extremely filthy personal habits of the people here, that we thus readily account for the numbers of insect pests that sometimes, notwithstanding the greatest care on our parts, find their way upon our persons, and feast off us when we retire in the fond but vain hope of finding rest.

Moths and tipulæ flit about our rooms in the evening, spiders spin their webs in the corners, for here there are no housemaids to keep the apartments tidy; beetles from time to time come humming over head, and flying right against the whitened wall fall heavily down, but renewing again and again their vain endeavours to escape; cockroaches, large and small, run up the walls; but occasionally a more objectionable creature than these makes its appearance: centipedes, although by no means common, nor apparently of so large a size as they attain to within the tropics, come creeping from their places of concealment; and a creature no less horrible in appearance, although naturally less noxious, is often found running over one's bed, or among his clothes in the darkness of the night; this appears to be one of the thysanuræ or fringe-tailed insects, and looks like a centipede with legs of enormous length, huge antennæ from its head, and a number of long and projecting tails. The creature however, is not more than two or three inches long, including all its tails and antennæ, and invariably endeavours to effect its escape when a light is produced.

Out of doors, the actual number of species of insects met with are few, yet the species that do occur are innumerable as regards individuals. It is a curious sight, as we ride or walk across the barren places elsewhere alluded to as occurring on the vast plain that surrounds Tein-tsin, to see huge larvæ of beetles, white and soft, but with black heads, crawling along the surface after the occurrence of a fall of rain during the sultry evenings of August. What could have disturbed these ugly looking things, and thus made them to leave their nests in their "present half-made up" state, it is impossible to say; but it is not likely that they would long escape the birds and smaller

animals that are ever on the look out for such tender morsels as they no doubt were calculated to form.

A green beetle, of about three quarters of an inch in length and narrow in form, suddenly appears in June, crowding upon the leaves and branches of some leguminous plants; nor will these insects take flight even when disturbed. Their elytra or wing cases would form handsome ornaments for ladies' dresses; indeed they probably are the very insects which in the northern parts of this empire are collected for this purpose; and here they occur for a few days in such numbers that there would be no difficulty in collecting them in almost any quantity.

A *meloe* or blistering fly beetle is found exposed for sale in the market here, but whether procured in the neighbourhood or imported from a distance I have not ascertained. In size it is smaller than the one ordinarily seen in Europe and India, but in other respects is similar to it. A little later in the season, beetles may almost hourly be met with upon the plain, rolling before, or rather behind them the mass of clay or other material in which we may presume that their eggs have just been deposited. It is amusing to watch the efforts of the creature on these occasions. Turning his back to the mass he is rolling, he pushes it most lustily, after rolling along with it down some "fearful precipice" that marks where a horse's foot had entered the ground when moist with rain, and then his efforts to extricate his load and self, tumbling and pushing again and again, until at last he reaches the summit, and then onwards until heels overhead, he tumbles into another pitfall, and so on.

Flitting or hovering over, or darting across the pools of water that collect after the heavy rains, the dragon-fly makes its appearance, and in the places where water remains for some months, as for instance in canals and ponds for irrigation, we may in September find the cast-off case of the insect when in its pupa state; for it is almost needless to observe, it is in water that the metamorphosis of this insect takes place. A few butterflies enliven the fields during the sunshine, and some moths pursue their silent aerial course after twilight has begun. Some of both these are sufficiently beautiful; but neither in variety of species nor in size of individuals do they equal what is seen in India.

On the surface of these ponds and pools, numbers of hydrometræ ran in circles precisely as we may observe at home on clear water; and once I observed the large water beetle suddenly descend to the bottom of one of the masses of water exterior to the city that is maintained in a state of purity by means of a plentiful growth of aquatic plants.

Wasps, hornets, and bees are common; the social wasp and the solitary one often selecting the eaves of our houses, or the lintels of our doors to build or excavate a nest in. The species of bee is very minute, is transversely streaked at intervals by buff-coloured bands upon a brown ground. It is said to yield excellent honey; some of the officers in the late advance to Pekin had honey in the comb brought to them. It is also obtainable in the market, and of good quality but whether actually procured from this species of bee I am not aware.

Of the class Orthoptera, there are several species, in addition to the cockroaches already enumerated. One species of Mantis is diligently searched for among the grass during the later period of summer, for the purpose of being given to pet birds as food. It is not a pugnacious creature, however, and cannot therefore be the species alluded to by Kirby and Spence as that which Chinese children keep in cages for the purpose of fighting.* Crickets are in all probability the insects here alluded to. They abound in this neighbourhood, and are frequently collected in order that they may be sold for this purpose. I have been told that large sums of money are frequently staked by rich Chinese upon the issue of a combat between two insects of this kind, and that many dollars will be given for one that stands its ground successfully against all comers.

One of the ground species is a very great favorite, not only among boys at Tein-tsin, but among the full grown, on account of its powers of so-called "song." On the 12th of July, I first saw some of these exposed for sale in small red cages, at stalls along the streets; and during the remaining part of autumn, a succession of species, or more probably of varieties, were one after another brought forward as the other disappeared. These, sometimes placed in neatly covered cages prepared from a small gourd

* Vol. i, p. 275.

shell, are carried about even by men, being placed in their bosoms; in almost every house, and shop and boat, one or more are similarly preserved, and fed during their brief period of life with a green leaf or fresh millet stalk.

During the very hot part of the year, that is from June onwards to the end of September, the trees are literally "alive" with the song of the cicada, the loud chirp of which repeated from scores of branches sometimes has a deafening effect. Of course we all know the reason of the extreme jollity of these insects, the males of which are alone the musicians.

> "Oh for the cicadas' happy lives,
> For they have all got silent wives."

Whether in this they are or are not fortunate is, after all, matter of opinion; but there is no second opinion as to the amount of disturbance they create in a still evening, after the glare of the sun has began to decline.

The numbers of locusts, apparently the true locust, that abound here would transcend belief, were they not seen. If we walk along the fields in autumn, several spring from the grass at each step we take. Baskets filled with them, dead as well as alive, are brought to market, and from the 4th of September, they seem to be esteemed a great gastronomic delicacy, for thence forward, heaps of them, fried, or rather boiled in oil, are exposed at almost every eating-stall we find in walking along the streets. I have never had sufficient courage to taste one myself, but we may presume them to be by no means unpalatable, from the fact of their being held in so great esteem as they are by the natives.

Here, then, we have wild honey; here we have people eating locusts as a delicacy; may it therefore not be possible to account for St. John having subsisted on similar food in the wilderness without having recourse to the idea of his having substituted for the insect locust the fruit of the *Inca biglobosa*, or locust tree, as is usually attributed to him. It must have indeed been but sorry fare either way.

Of the insects that cause injury to green crops and growing shrubs are what seems to be the "turnip fly," and an aphis. The former commits great havoc among the tops of cruciferous

plants, more especially radishes; the latter destroy with great rapidity some of the smaller trees; thus I have seen a peach tree killed by them in an extremely short time, and other plants more or less permanently injured.

Ants, especially a small black species, abound; these seem to use one regular pathway from their nest to their ordinary hunting ground, so that by observing their progress along this, one line may be seen proceeding in search of food, one line returning. In August, vast numbers of similar ants seemed suddenly to obtain wings; these settled upon the flowers of some trees that were in full blossom, crowding so thickly as to very nearly conceal the natural colour of the petals. The *Sophora japonica* was in this respect an especial favorite with them.

It does not appear that the termite or white ant exists in this neighbourhood; at least I have not met with it, nor have I heard that it has been met with; neither does the silk moth occur here. Silk in fabric is extensively sold, and forms a great part of the dress of the more wealthy natives but it is all imported from places situated considerably to the southward.

In the stagnant pools, and imbedded in the soft alluvium of which the country hereabout is formed, are three of the ordinary fresh-water shells; two of these appear to be species of Planabis and Paludina; the third is a bivalve, to external appearance a cardium, or closely allied species. In the market we meet with a few species of shell-fish of this description, that are evidently obtained from the sea; these being cuttle-fish, mussels, a scollop, and cockles; the latter the most numerous, and of a large size. They are usually preserved for some time in salt water, where it is a pretty sight to watch them as they open their shells, and project their light yellow "foot."

Oysters are found in some parts of the Gulf of Pecheli, but are not so far as I have seen brought to the Tein-tsin market.

Fish of various kinds, dried as well as fresh, are procurable in abundance; of those used at table, the greatest favorites are soles and a kind of plaice. Eels are plentiful, and seem to be looked upon as a great delicacy by the natives; and sturgeon is at times to be met with in the market; but it is doubtful

whether this fish is not brought from some distance, and not caught in the Peiho.

In the early part of the season, great numbers of gold fish are exposed for sale in the streets; these have peculiar tails, forming perfect monstrosities, the finny portion of it being developed in so peculiar a way as to give the appearance of three or even more tails. The Chinese blow glass globes for the reception of these fish, of which they seem to be very fond, as ornaments in their houses.

As in the case of birds, so with fish; there is a constant succession of species here, according to season of the year, very few being obtainable throughout the entire year.

The number of reptiles does not seem large. In summer an occasional gecko may be seen pursuing along the wall some fly, or moth, or mosquito. Snakes do not seem to be numerous, nor am I able to state whether the poisonous species are common. On the 19th of April one of these made its appearance, and was killed while in the act of descending from the roof of one of the buildings connected with the hospital.

In shops, preserved skins of a python or boa are often met with, especially in those where musical instruments are manufactured; but it would seem that they are imported from the south, to be employed for the purpose of ornaments on these instruments.

In the fields I have only met with one small lizard. Upon one occasion I met a boy who had a chameleon for sale; it was of a small size, and the only one of the species I had seen.

A small land tortoise, beautifully marked, is a great favorite here among boys; and an aquatic species, with a tough leathery shell, would seem to be tolerably abundant in the river.

We cannot resist surprise at the suddenness with which frogs make their appearance here, after the intense cold of winter, and then the intense heat of summer. No sooner does a heavy fall of rain in May and June moisten the parched earth, or give rise to small pools in the fields, than frogs may be heard to croak; and from thence, onward during autumn, they take shelter among the reeds and weeds that spring up in such places, depositing their spawn, which may be observed from day to day as it progresses towards the development of tadpoles.

Frogs would appear to be as highly esteemed as food by the Chinese as they are by the French. Their capture with this view becomes a regular pursuit of a number of boys. Their manner of taking these creatures is this—with bamboos and millet stalks, secured to each other by a piece of thread or grass fibre, they extemporise a flexible spear-handle, which looks at first sight like a fishing rod. It is more or less flexible, according to the size of its individual component parts, and of a length not less than twelve to fifteen feet; at its further end it is armed with a single sharp iron spike. The boy carefully watches at the side of a marsh or pool in which he knows his "game" resides, and, on hearing the animal croak, institutes a searching look, until he catches sight of the reptile; he then slowly and gradually extends the spear towards it until the point reaches within a couple of feet or so. Meantime the intended victim is either heedless of the impending danger, or he is too much occupied with the business of croaking to give a thought to the sharp spike that probably the next instant transfixes him; for the "spearer," with a sudden dart, pierces him right through; and, raising the spear in the air, so as to prevent his escape, carries him triumphantly to his young companion, who forthwith adds him to the bunch of croakers he already has; for these creatures are evidently rendered more than usually clamorous after having been transfixed in such a manner.

The number of birds that remain in the neighbourhood throughout the entire year is very small; including of those that are wild, not more than a few crows and magpies, in addition to some wretched sparrows, and in the fields a kind of snow bunting. With the returning spring, however, other species begin to appear, and thenceforward, every successive change in the atmosphere, brings with it an addition to the feathered race.

Among the first birds to appear in spring are a few stray gulls that find their way inland, and an occasional white tern that may, early in March, be seen flitting and skimming over the surface of the river. Wild duck, teal, geese, and swan, began their return northward about the same time. On the 25th of this month a very large flight of the latter was observed

passing towards the north-west; their order of flight having much the character of that of wild geese; that is like the letter V, the apex being forward, and one of the limbs of the figure considerably shorter than the other, thus ⋏. These birds were by no means mute, although certainly much less noisy than wild geese. On the same date a plover made its appearance on the fields; its back dark gray, the tips of its wings white; and shortly afterwards an occasional lapwing might be seen searching for its appropriate insect food among the soft fields in process of cultivation. And, as the summer advanced, flocks of gray plover, of pectincole, and dotterell, are met with upon the open plain, running along the ground, and not taking to flight until hard pressed by the stranger.

Of the birds that are more especially found in the vicinity of water, the avocet is the first to visit the neighbourhood. A very beautiful individual of this species was seen on the 28th of March to alight in the shiny mud at the side of the river that had become exposed after the tide had retired, and which, heedless of my near proximity to it, commenced at once, with beak deep buried in the soft material, to preserve its peculiar but graceful zigzag hunt after the creatures upon which it feeds.

Sand-pipers become plentiful, reminding one, by their peculiar cry and hurried flight, of similar familiar birds disturbed during trout-fishing excursions in the Scottish highlands. Curlew also appear, but comparatively rarely; and in the market the species of *tringa* known by the name of the dwarf curlew may be obtained abundantly throughout the early part of summer.

A specimen of the stilt (*Himantopus*) is from time to time met with, but this bird seems to be comparatively rare. And once or twice I have seen upon the grand canal an individual coot.

The common gray heron makes its appearance in the latter part of summer, stalking along the banks of the river and canals; and when disturbed, taking its flight to a distance of some hundred yards, and then alighting in the shallow parts; and thus time after time, until a person becomes tired of following it.

It may be mentioned that the stork does not seem to be met with in this vicinity, notwithstanding that in this part of China, as well as in Japan, this bird is held to represent longevity, and

hence the frequency with which it is represented on works of art; indeed, it may be said to be in a manner held sacred by the people—that is, in so far as they can hold any creature *sacred*; although their veneration for it is of a very different kind from that of the Egyptians to the ibis, or the Hindoo to the peacock.

In the month of April the small bustard becomes plentiful in the market, and is an especial favorite at the dinner table. It may be that the Chinese consider that the English are, as regards their food, as gregarious as they themselves. This is the only way in which we can account for the fact of a roasted pelican having been served up at mess to the officers of one of the regiments in occupation of this city. No wonder that it was not esteemed a very great delicacy! The bird is probably found in the marshy district, at the distance of some miles from Tein-tsin, but is not met with in the immediate neighbourhood of that town.

In the month of April an occasional hoopoe may be met with, the species being that which in India is so great a favorite, and which is also an occasional visitant to England. Here, however, these birds, which were found by me feeding upon the banks of an irrigation canal were extremely wild, not permitting me to approach within many yards of them; thus they differed in one respect as regards their habits from those that hop about the gardens and lawns, close to the very doors of Indian bungalows.

It would be tedious and not profitable to enumerate the birds that temporarily alight here throughout the summer, a few only of the most interesting will therefore be noted; with the return of warmth, a small species of lark may be met with abundantly in the fields, rising and fluttering in the air every now and then; sometimes flitting by irregular starts downwards again, yet chirping sweetly its peculiar song all the time; at others, rising perpendicularly, and, having attained its height, thence darting onwards to some distant part of the plain, whence it may be seen soon afterwards rising and singing undisturbed, and away from annoyance. Finches of numerous species and sub-genera appear, and are brought for sale to market; of these the larger-billed species, that like the coccothraustes, is the

greatest favorite among boys, by whom they are purchased extensively to be put in cages. There are also the smaller species, like the avec-de-vats of Java, and of the west coast of Africa. Grackles and fly-catchers, in great variety, are also brought to market, being netted in the fields; a small, green fly-catcher, having buff-coloured featherless zones around the eyes, being by far the greatest favorite of the whole. Fly-catchers and individuals of the wheat-ear or saxicola genus, also are abundant in the neighbourhood of water, and wherever the soil is moist. The white-necked crow, a magnificent bird, has been elsewhere mentioned as making its appearance early in April. It seems to be a scarce bird, not more than two or three being ever seen at the same time. Throughout the intense heat of the summer, it seemed to withdraw to a more moderate climate, returning once more to us in September.

On the 3rd of June, while riding along the banks of the river, at a distance of several miles from Tein-tsin, I heard the long familiar note of the cuckoo. Shortly afterwards, the British species of this bird was to be found alive in the market. Indeed, a person interested in ornithology, may readily obtain a knowledge of what birds are "in season" by a visit in the early mornings of that busy place. Among other familiar forest-birds were woodpeckers and the wryneck. After the summer rains have begun to fall, a beautiful, dark-coloured tern makes its appearance, hovering in flocks over the canals. Now it is that sportsmen proceed snipe-shooting, these birds apparently only coming into season; and as autumn approaches quail become plentiful in the fields. That these latter had for some time previous been obtainable at no great distance, is evident from the fact of numbers of them having been brought for sale by the natives, who are said to stake large sums of money on the result of a fight between two males of these birds, to which sport, as well as fighting with the ordinary game-cock, they are very partial.

The birds of prey are numerous as regards individuals, but not so as regards species; of the lower order of these, one or two specimens of the neophron, or "Turkey-buzzard" were met with in the early part of the season. The gray-kite, and occasionally the red-backed kite, with grayish-white underparts,

are met with. Falcons are not only plentiful, the smaller kinds breeding in the neighbourhood, but they, and especially the peregrine and the kestril, are carefully trained for the purpose of the chase, nor is it thought worth the expenses of food to retain a trained bird from year to year. After the hawking season is over, that is, when the cold weather has ended, there being no further use for the birds, they are kept no longer. In early autumn, others, old as well as young, are captured, and, being tamed by the ready and effective process elsewhere described, they are so quickly trained that by the month of December, when the season for this kind of sport sets in, they are ready to be employed in the chase. They are readily trained by the natives; the process is briefly this: the bird, having been first rendered perfectly tame, is deprived of food until very hungry; the trainer then, having secured his foot by one end of a line, the remainder of which, to a length of a good many yards, is artistically retained in his hand, proceeds to some field, the bird, properly hooded, being all the while on the wrist of the falconer, which is rendered secure against injury from the talons by a thick leather glove or gauntlet. He at the same time has in his possession a dead bird, and this, having first unhooded the hawk, he throws to a distance of a few feet. The latter, seeing the delicate morsel, alights after it, but he is only permitted to taste it. Thus, by throwing the bird further and further, the hawk is soon taught to extend its flight; and then from dead birds, living ones, and lastly hares, are substituted, until its education is complete.

Of nocturnal birds of prey, owls, large as well as small, are numerous; a magnificent specimen of the great horned owl was on one occasion seen in the market, where it was exposed alive for sale, and, here, also, from time to time, the smaller species have been met with.

Of the gaping birds, the night-jar or goat-sucker is very common; gliding silently through the air, close to the surface of the more barren portions of the fields, soon after the sun has set. Swallows have been incidentally mentioned elsewhere, and they occur here in extensive flights during the entire summer; the first of them having been seen by me on the 9th of April, and the last on the 8th of October. For some time after its appear-

ance, the bird was mute; it did not continue so long, however. On the 17th of June, I noted that for some days back, in the cool of the evening, a swallow, to all appearance the *Hirundo rustica*, perches on a rope near my door, and chirps a song sweeter than I had hitherto thought it capable of. From this time onwards until early autumn, this delightful little visitor continued to return, evening after evening, to its favorite spot, where for some time it would warble its soft notes, undisturbed by the people, who every few minutes passed by at a distance from him of less than thirty yards.*

With the approach of winter, the summer visitants take their departure, and those that delight in cold weather make their appearance. Duck, more especially fin-tailed, shoveller, and mallard, arrive from the northward. Teal become abundant in the market: wild geese are sold for a trifle; an occasional partridge is met with, and magnificent pheasants are brought down from the hills of Tartary. In riding across the plain at this season, immense flights of the pterocles or sand-grouse sweep with noisy flights over our heads, as they arrive to take up their winter residence. Rooks begin to congregate in large flocks; as they fly, the note of the jackdaw among them is easily detected, and on the bare fields, from which the crops have been removed, flights of a small bunting—no doubt the local representative of our home snow species—rise in such numbers that they literally at times look like clouds. These, as already mentioned, are captured in great numbers throughout the winter and form a most delicate dish at table.

It is a decidedly remarkably circumstance that the natives of this part of China, although as a class careless and indifferent to suffering among their fellow-men, and seldom, if ever, affec-

* Gilbert White, in his still popular 'Natural History of Selborne,' remarks that among the birds that sing as they fly, is the swallow (*Hirundo domestica*) in soft sunny weather (p. 138). At p. 191, he remarks "The swallow is a delicious songster, and in soft sunny weather sings both perching and flying; on trees, in a kind of concert, and on chimney tops." He further (p. 210) gives the date of arrival of swallows at South Zele, in Devonshire, in the year 1774, as the 25th of April.

In works upon natural history, we are informed that the *Hirundo rustica* appears in England about April 10th, and remains about six months. The coincidence between these dates and those noted by me at Tein-tsin is remarkable and interesting. (See Patterson's 'Zoology,' p. 361.)

tionate in their families, as the civilised Christian is, are, as a class, extremely partial to pet birds. It is no uncommon thing to see an adult Chinaman, with cage in hand, sunning his little favorite, or beating the clumps of grass with tamarisk bushes upon the plain for insects, with as much eagerness as a boy would do in England. A great number of the birds thus kept in cages have been bred in captivity; but the majority have been caught by nets and snares, and tamed. The Chinese practise two plans for taming birds, both seem equally successful, and although more or less cruel while the process is actually taking place, are of such short continuance as to probably be, upon the whole, much less painful than our more protracted, but more merciful system. Birds as they alight or remain temporarily in this part of China, are, as already mentioned, netted in great abundance. They are immediately brought to market in baskets covered over by netting, and in these, not unfrequently, injure themselves in their struggles to escape, if, indeed, they had not already sustained more or less hurt. Being purchased, it matters not how wild they are, they are readily rendered perfectly tame. By one process a bird is dipped over head and ears into a bucket of cold water, immediately after which, the poor, half-drowned thing clings to the warmth of the hand while it trims its feathers, and thenceforward remains as tame as tame can be. By another process, a thread or string being tied around the creature's neck, it is permitted to struggle and fret itself, until, exhausted by fear and its exertions, it becomes glad to take shelter on its tormentor's hand. The birds that appear to be most esteemed by the natives are a brown song-thrush, which, in early spring, pipes its notes as if in imitation of our own home mavis, the ordinary yellow canary, a small green linnet, a drymirca, a species of the oriole, and a whitish coloured shrike. The latter neither sings nor pipes, but seems to afford amusement by its peculiar habits. It is usually retained on a perch, consisting of a slender piece of wood, having at the top a cross-bit upon which the bird settles, a thread attached to its foot and to the perch guarding against escape. It is the especial amusement of the possessor of a bird of this description to teach it to catch in its beak, when in the act of falling, beetles, or other insects, or

morsels of meat thrown high up in the air, so as to descend as close past his perch as possible, the perch being for this purpose stuck in a wall or in the folding of a door.

But by far the most beautiful of the bird pets, and beyond all comparison the sweetest songster, is a species of what is evidently one of the Sylviadæ. This bird, which has all the habits of the genus, is distinguished by a beautiful patch upon its breast, of metallic red, or metallic blue. It is about the size of our own robin, but in sweetness and extent of song equals the nightingale.

What is here called the mocking bird, and called by the Chinese *wa wee*, has all the characters of an alanda. Like the lark genus it feeds entirely upon grain; the breadth of shoulder, the half open wings, and its general attitude are precisely similar; so also is its colour, but its size is perhaps half as large again as our British species. The beak is somewhat more arched, and the hind toe less prolonged. Like our bird, too, this is fond of standing upon a rounded elevation placed for that purpose in the bottom of the cage. It occasionally chirps a short song; but its accomplishment does not lie so much in this as in the wonderful facility with which it imitates any of the more common sounds, as, for instance, the barking of a dog, the mewing of a cat, or the crying of a child; and so universal a favorite is it, that in almost every shop and private house, the cage of the wa wee hangs outside the door or immediately within.

Pigeons are great favorites, and the varieties as numerous as they are in India. The carrier is frequently made use of for the purpose of conveying information between distant places, and the Chinese throughout the winter season seem to take a pleasure in attaching a light musical instrument, made of bamboo, to the tail of these birds in such a manner as that, without interfering with their flight, it produces a peculiar whistling sound as the air is thus made to pass through it. The pigeons, instead of taking alarm at the noise thus created, seem themselves to enjoy it.

Of fowls, large and small "Cochin China" and bantam are in immense numbers there. Eggs that have been buried in earth for a year or two are esteemed a delicacy at the tables of

the rich; chickens are some of the chief dishes at the numerous cook-shops along the streets, and cock-fighting is, as already mentioned, a very favorite pastime among the men; thus, therefore, poultry are valuable for ornament, for amusement, and for food.

Never in any country where I have been have I seen eggs in such abundance as they are in this part of China; and what is perhaps as remarkable as their abundance is the fact that they are obtainable in greater quantity, and of better quality during the cold of winter than they are in summer. This must no doubt be from the circumstance that the natives have some method of preserving them with which we have not yet become acquainted. They must also have a method of incubating these eggs that we have not been able to find in this neighbourhood, but which is well known to exist in some other parts of the empire.

On the 27th of May I came accidentally upon people conveying large baskets, full of small chickens, to market. The birds were evidently not more than a very few days old; hundreds, literally hundreds, of them, were sprawling over one another in these baskets, but my ignorance of Chinese prevented me from obtaining any particulars in regard to them.

It may be well to observe that geese and ducks thrive extremely well, and are abundant at Tein-tsin, but turkeys are not to be met with.

Of quadrupeds the number of species met with at Tein-tsin are few. In fact the bare, arid nature of the country around it during the greater part of the year, and the extremes of heat and cold to which the climate is liable, are circumstances prejudicial to the existence of mammalia in a wild state.

There do not appear to be any animals of the chase of the larger kinds in this neighbourhood. The fox and a burrowing species of hare seem to be the only two to be found. These remain throughout the year; and during the winter season, when the fields are perfectly bare, afford good sport, being usually hunted by both dogs and hawks at the same time; thus they have but very little chance of escape left them.

On the field an occasional hedgehog is met with during the summer; but these animals retire or become dormant as soon as cold approaches; field mice and dormice are frequent,

while within doors, their cousins, the common rat and mouse are no less so.

Bats fly about in great numbers in the early evenings of summer and autumn, but none of a large size appear to be found in the neighbourhood; among the nocturnal animals that make havoc among pet pigeons and poultry is a stoat; this creature manages to find its way along the eaves of houses, and is extremely destructive to the young birds.

Several quadrupeds, which although apparently not found in the immediate neighbourhood, as brought from a little distance either for the purpose of exhibition or for sale; among these is the squirrel, of which two species have been met with; the one red backed, with its under parts white, and tail large and bushy, similar to the European one; the other, the small striped one, identical in appearance with the one so familiar to every person who has resided in India, as constantly gambolling on trees in the neighbourhood of houses.

One species of monkey has been brought in from the district. It is small, in its disposition remarkably gentle, and speedily becomes attached to its owner; the consequence is, that it is a great favorite.

A small bear has occasionally been observed, but as this species of quadruped was being exhibited, and, as in Europe, made to perform various antics and tricks, it may possibly have been originally brought from a great distance.

The badger is, in all probability found in the near vicinity; this animal has been met with, evidently soon after having been captured; but the natives who had it in their possession were either too hurried or too frightened to give any account of the how, or the when, or the where, of its capture. Wolves, if we may judge from the abundance and cheapness of fur made from their skins in the shops, must be very common at no great distance from Tein-tsin. Furs of all kinds are abundant here, those of the wolf and fox being next in frequency to that of the sheep, which is the most abundant of all. One kind of fur derived from the sheep, however, is not only comparatively rare, but also very expensive; namely, what is called Astracan fur. It is said to be prepared from the skin of the unborn lamb, the ewe being necessarily sacrificed in order to obtain it. The

most valuable kind of this is of a pale gray colour; the next in value black, and the least valuable piece white; the wool of all being beautifully curled, but short.

Tiger skins, and those of leopards, are also abundant, being used for mats, and for the purpose of being thrown over couches. The animals from which these are taken are believed to be found in Mongolia and Thibet, but must from their locality be exposed to very intense cold in winter. It is known, however, that on the Himalayas a tiger, in no way different in appearance from that of Bengal, is met with prowling about for prey amidst the deep snow.

The most valuable furs are the sable and the ermine; both these are abundantly brought from Siberia. Seal skin, brought from the direction of the Amoor is also plentiful, but expensive. The cheapest description of fur is that of squirrel skin, said to be brought from forests situated in the direction of Pekin, but at what distance we have not been able to ascertain.

Of the quadrupeds used as food, the pig, the ox, and the sheep, occur abundantly. The first of these are reared in flocks; a keeper tends them in the fields where they live upon whatever they can pick up. In the evening they are driven home, where a mess of what looks like oil-cake, with grain boiled in water, awaits them; others, however, and by far the greater number have to pick up their food as best they may upon the streets; and so filthy is the nature of what they there find, that it had better not be particularised.

In the midst of all the dirt, pigs are prolific in an equal proportion with what is attributed to the biped under similar circumstances. Heaps of little pigs, and heaps of little children, may often be seen here wallowing in close proximity in the same slimy mud.

Pork is less abundantly eaten here by the natives than it is in the south, and, perhaps, it is not to be wondered at; yet still it forms by no means an inconsiderable article of their food.

Oxen are small and shaggy, not by any means unlike those of the highlands of Scotland. They are indiscriminately used with donkeys, mules, and ponies, for the purpose of draught; and furnish beef which is tolerably abundantly eaten by the people of Tein-tsin.

It may be mentioned, that milk is not used for the purpose of food either here or in the south of China. It appears, however, to be held in high esteem in Mongolia, where it is abundantly used. After a little time, the people finding that a ready sale for milk could be obtained among the foreigners, it was regularly brought to market; but its quality was found to be so very inferior, and its flavour so very slight, that it never was much used, even by us. We may presume that the herbage obtainable in China is not calculated to impart to milk those properties which render it in England and Europe generally so great a luxury at table.

Sheep are reared in small numbers, but large flocks are regularly brought down from Mongolia. The mutton is exceedingly superior in quality, although the animals obtain no other food than the scanty and scrubby herbage which, during some part of the year, scarcely covers the surface of the ground, though during the brief summer season it grows luxuriantly. The sheep are almost all white; a few have black faces; their limbs are long, and tails rounded, containing many pounds of fat, as do those of the sheep of Cabul and those of Syria. They differ in this respect from the large-tailed sheep of the Cape of Good Hope, that whereas the latter have the whole length of tail included in the rounded mass of fat, those of Tein-tsin have this peculiar deposition upon the upper two thirds of it, the lower third being free; and what gives it a very peculiar appearance is a half turn which it has.

Flocks of sheep are each morning taken out upon the fallow portions of the plain in order to graze; the flock is led by one of the shepherds, as mentioned in Scripture of the Syrian sheep, but here the stragglers are kept up by a second shepherd who brings up the rear, aided by a dog in every respect similar to the common shepherd's dog of Scotland. In the intensely cold weather, sheep and oxen are fed in the house; so, indeed, are horses and mules; for this purpose millet stalks, chopped very small, are extensively used; and if we may judge from the excellent condition in which animals so fed usually are, it must be allowed that this species of fodder is extremely nutritious.

The breed of horses here is very small and shaggy. The dis-

tinguishing characters of these animals are short legs, stout round body, "fiddle" heads, and long hair. The Chinamen are perhaps as grooms inferior to any other race of people among whom the horse is known; and, as a result, the Tartar breed of horses, which alone is found here native, bear upon them all the marks of utter neglect. Notwithstanding their ungainly look and general appearance of neglect, however, they are not only robust and powerful, but extremely fleet; true they do not gallop; they do not appear to know how to gallop; they run with a gait not unlike that of a pig, but in this way manage to shuffle along so quickly, that it puts a good horse at full gallop upon his mettle to catch them up, and it is said that the Tartar cavalry, mounted upon animals like these, literally outran their pursuers during the late actions in this neighbourhood.

A small, wretched-looking race of donkeys are used partly for draught in the fields; and during our residence there were frequently hired out to soldiers, who, mounted upon them, took excursions into the country around. These donkeys were particularly useful in this respect, for the soldiers had but few means of recreation, and being able for a few cash to hire donkeys, a ride even upon these humble steeds served frequently to pass a few hours that would otherwise have hung very heavy upon them.

A peculiar custom in respect to donkeys prevails here, as well as in some other parts of the world; the nostrils of all are deeply slit, with the view, as the people believe, of giving admittance to a greater supply of air to the lungs during severe exertion than would be possible by nostrils in their natural state. Donkey drivers upon the Himalayas similarly slit up the nostrils of their animals, and for the same supposed purpose; and the same custom is said to be practised in Syria. By far the most favorite draught animal in this part of China, however, is the mule. As has just been mentioned, the breed of both horses and donkeys is small. Strange, however, the mules are in size and make remarkably fine; some are not less than fifteen hands in height; being easily kept clean, their skins are wonderfully sleek. For the purpose of drawing the travelling carts of the country, mules are almost solely used, and the higher

orders of the followers of state officers more frequently ride them, when proceeding in processions of ceremony, than they do horses.

A few remarks upon cats and dogs must wind up this imperfect chapter upon the animals of the north of China. Both these animals serve other purposes, no doubt, but are also used as food, although only by the very poorest classes of the people. The native cat is somewhat similar to the Japanese species, inasmuch as they are almost destitute of tail; this appendage is noticed in them to a length of three to four inches, and has the additional peculiarity of the distal vertebra being turned to one side at right angles to the one next it, so as to give the appearance to the tail of being tufted at the end. Cats are proverbial everywhere for their prowling disposition, and their noisy practices at night; in both these peculiarities those of the north of China are second to none.

Crowds of hungry dogs, lean and mangy, prowl about the streets in all directions; as a rule, they will make their escape, barking or howling as they run, from an European; but from their extreme numbers, they are so much in the way, that sometimes a person coming upon them suddenly gets bitten; hydrophobia is by no means an uncommon occurrence in consequence; this result would not be a matter of wonder, when we shall have considered the horrible nature of the food of these animals; but it is a somewhat strange circumstance, that although this disease arises sometimes from the bite of the wretched animals that prowl along the streets, yet it is still more frequent after the bite of the pampered little wretches called Pekin dogs, from which the now famous King Charles's spaniels are believed to be descended.

That wretched beggars sometimes pick up, and carry away for the purpose of food the carcasses of dogs that have died from disease, I have personally witnessed, and that the young of the same animals are sold for a similar purpose I have frequently heard stated confidently. There can scarcely be even among the lower animals, a more filthy feeder than the Chinaman; so that it can be readily imagined that to him a puppy dog would be quite a *bon bouche*. The great majority of dogs that prowl about the street appear to be owned by no master, they there-

fore have to live upon what garbage they can find; objects, therefore, of very filthy nature, are greedily eaten by them; and so very *omnivorous* do they become through necessity, that they may sometimes in summer be seen devouring pieces of water melon, and other succulent fruit that have been thrown away. This I have personally seen, but I have also seen a scene far more repulsive, and one that led me to believe that, in some places at least, the herds of dogs, that render an approach to them disagreeable, if not dangerous, are maintained for a very dreadful purpose. On the 24th of May, in riding towards the country, I had occasion to pass through one of the most crowded burial places in the neighbourhood of the town. As I was in the act of doing so, I suddenly met a dog carrying in its mouth the dead body of an infant, of the age apparently of only a few weeks. The head had either been gnawed off, or cut off; one leg and both arms were also deficient, they probably having already formed the repast of some canine scavenger. The body seemed perfectly free from decomposition, and therefore, we may presume that death, by whatever cause induced, could but very recently have taken place. My companion and myself stood for a little, to observe the horrible exhibition; several Chinese were near, and as we pulled up for an instant, they laughingly remarked to each other, "The English are looking at it." This incident, then, trifling as it was in itself, spoke loudly of the cruelty, and want of consciousness of how valuable life is, which characterise the people; for even if in this instance we cannot impute to them the murder of the infant, it is impossible to resist the conclusion, that the body almost immediately after death had been so carelessly disposed of, as to render it easy for the dogs to obtain possession of it. After this, it was not possible for us to resist the inference, that where dogs abounded, dead children might also be found were minute search instituted.

In addition to the two descriptions of dogs already alluded to, namely, the Pekin dog, with high rounded forehead, short muzzle, and short legs; and the sheep dog, resembling exactly the "*colly*," or sheep dog of Scotland, there are several others to be met with at Tein-tsin. Of these, the rarer and more valuable is a description of greyhound, from the shoulders and

flanks of which long hair descends in tufts. It is in its general characters very similar to what in India is called the Rampore greyhound, and like it is used only for the chase.

A breed, precisely like that of Skye terriers, is also found here, being that described by Mr. Oliphant as the Shan-tung terrier. Its hair is long and shaggy over its body; its eyes are almost hidden by that on its face, and in length of body and shortness of legs it exactly resembles the famous breed of Scotland. Then, again, we have what is here called the Canton dog; it is considerably larger than the one just described, is thickly covered with long hair; the tail so much curled over the back as to occasion the impression that it is about to start spontaneously from its attachment; the head is broad behind, but tapering very much towards the muzzle; the eyes placed so peculiarly far forwards, and directed upwards in such a manner as to give to the face the general character, in a small degree, of that of the lemur.

CHAPTER VIII.

CLIMATOLOGY OF TEIN-TSIN.

Winter cold—Periods of cold—Quarrying ice—Ice pits—Dryness of atmosphere—Causes of coldness—Regularity in the weather—Greatest cold—Returning warmth—A dust storm—Its effects upon the sick—Ice on the river breaks up—Vegetation appears—Hot winds—Electricity—Hot season—Clearness of the atmosphere—Comet—Period of maximum heat—Temperature moderates—Rain—Rapid fall of temperature—Concluding remarks.

The geographical position of Tein-tsin, as given by the Royal Engineers is, in north latitude, 39° 9′; east longitude, 117° 16′; it is about thirty miles distant from the sea; the nearest mountain range about 100 miles southward from it. In consequence of the extremely level nature of the country, the height of the city is not more than eighteen feet above the level of the sea; the tide therefore rises to a height of several feet in that part of the Peiho river and imperial canal which passes through Tein-tsin to form their confluence.

In endeavouring to give the following abstract of meteorological observations, I must observe that the readings of the instruments were very carefully registered by surgeon Dr. Lamprey, of the 67th regiment, under whose charge the public instruments were placed; and that from the monthly reports of this medical officer, furnished to me, I am able to deduce the following remarks upon the climate of this part of China. These instru-

ments* were placed in the most favorable position for the purposes of observation that could be found in a crowded city such as Tein-tsin was. They were sheltered as far as possible from radiation and solar heat; the thermometers were in the open air, but the barometer was within doors, its reservoir situated about twenty-nine feet above the sea level.

The primary object in view in taking an account of the meteorological conditions was to trace the bearing these had upon the phenomena and prevalence of particular diseases. Hence in the following tables and remarks, this is brought more or less prominently forward.

* The instruments by which the observations at Tein-tsin were taken, were all from Negretti and Zambra.

The minimum thermometer bore the number 1461.

The hygrometer had no number.

The maximum thermometer bore the number 2262.

The barometer—a portable one—had the number 389.

DECEMBER, 1860.

The instruments having been carefully placed as described, the observations were for the first time registered on the 1st of this month, and the following Table shows the results:

Strength—British, 3488; *Seikhs,* 298. *Total,* 3786.

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admission into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
1	20·	45·	25·	30·20	30·20	00·00	Not noted	—	2	—	
2	25·5	45·	18·5	30·23	30·25	·02	ditto	—	9	1	
3	26·	47·	21·	29·95	30·05	·15	56	1	9	1	
4	24·	50·	26·	30·04	30·25	·21	33	—	16	1	
5	23·	43·	20·	30·42	30·44	·02	59	1	13	—	
6	23·5	35·	12·5	30·35	30·35	·00	72	1	8	1	
7	23·	39·	16·	30·35	30·42	·07	84	1	15	—	One case admitted of fever with diarrhœa.
8	32·2	43·	10·8	30·32	30·35	·03	78	—	16	1	
9	30·5	40·	9·5	30·23	30·41	·18	62	4	13	—	Slight snow fell during previous night.
10	24·	39·	15·	30·20	30·25	·05	97	3	8	—	One case admitted with fever, had successively hepatitis and dysentery: invalided.
11	27·	36·	9·	30·14	30·22	·08	100	3	9	—	
12	23·	34·	11·	30·15	30·22	·07	95	3	12	—	
13	30·	36·	6·	30·25	30·35	·10	95	3	5	1	Slight fall of snow.
14	28·5	37·	9·5	30·30	30·40	·10	100	3	10	1	
15	28·	40·	12·	30·35	30·41	·06	97	2	10	—	One case of fever, afterwards seized with dysentery: died.
16	24·	42·	18·	29·85	30·15	·30	59	1	8	2	
17	24·	44·	20·	29·72	29·85	·13	56	—	17	—	
18	28·	46·	18·	29·80	30·25	·45	70	3	15	—	
19	21·	31·	10·	30·60	30·65	·05	98	3	23	2	
20	16·	26·	10·	30·45	30·71	·26	100	—	14	1	

21	8·	24·	16·	30·69	30·75	·06	98	—	10	—	Frost set in, river closed by ice; wind north.
22	5·5	22·5	17·	30·45	30·60	·15	94	—	12	—	
23	10·5	27·	16·5	30·45	30·52	·08	76	—	17	—	One case of fever admitted, subsequently seized with diarrhœa; another, admitted with dyspepsia, became attacked by fever.
24	9·5	30·5	21·	30·42	30·70	·28	96	1	17	—	
25	22·5	36·	13·5	30·24	30·36	·12	79	—	19	—	
26	12·	36·	24·	30·42	30·53	·11	98	1	8	1	One case admitted with bronchitis, was seized with typhoid fever: died.
27	11·	36·	25·	30·11	30·38	·27	98	1	11	—	One case suffering from rheumatism, afterwards was seized with fever.
28	21·5	35·5	14·	30·10	30·20	·10	89	—	35	1	
29	21·	34·5	13·5	30·36	30·54	·18	71	—	28	1	
30	11·	25·	14·	30·66	30·71	·05	Dryness very great	1	25	—	Hygrometer 22·5°—17·5° Fahr.
31	3·	25·	32·	30·48	30·70	·22	68	2	21	—	

Highest daily range of the thermometer was 26° Fahr., and occurred on the 4th.

The lowest daily range was 6° Fahr., and happened on the 13th.

The severe cold set in suddenly on the 19th after a fall of barometer, and continued to the end of the month.

The mornings were generally clear throughout the month—a few scattered clouds only dotting the sky.

NOTE.—The numbers upon this and the succeeding tables represent the actual readings of the instruments; no reductions for temperature or height being made as regards the barometer.

The hygrometer in this and the succeeding tables has been noted at 3 p.m.

The following analysis of the observations taken shows that, as regards temperature—

	To 9 A.M.	To 3 P.M.	To 9 P.M.
The mean maximum was . .	30·4	35·8	34·2
„ „ minimum . . .	21·0	21·2	25·5
Actual mean	25·7	28·5	29·8

The highest degree attained during the month (it occurred on the 4th) was	50·0
The lowest degree reached (it happened on the 31st) was	3·0
The mean monthly temperature was	28·0
The greatest range during the month was . . .	47·0
The mean daily range of the thermometer during the month	16·2
The average amount of vapour in the atmosphere on 29 days of the month was	78·0
On one day, the hygrometer indicated a greater degree of dryness than we had the means of calculating, viz., 30th December, on which occasion the dry thermometer was 22·5°, wet 17·5°; and one day the state of the hygrometer was not noted.	
During nineteen days, on which the presence of ozone in the atmosphere was perceptible, the average degree of it according to scale was	2·0
On twelve days its presence was not perceptible.	
The general character of the weather during the month was dry and cold.	
No rain fell throughout the whole of it.	
Snow fell upon two days; the total fall amounting only to inch	0·042
The prevailing wind was pure north.	
The directions from which the wind blew being: northerly, 10 days; southerly, 7 days; easterly, 7 days; and westerly, 3 days.	
The monthly rate of mortality among the British troops would amount for the year, per cent., to .	5·16

The rates of admissions on account of climatorial diseases

among the British, were as follow, viz. (including all hospitals) :

Fever, per cent. of strength	0·72
Pulmonic diseases	0·56
Diseases of stomach and bowels . . .	1·44
Rheumatic diseases	0·18
Liver diseases	0·05

The general character of the weather throughout the month is described as fine, pleasant, and bracing; though the thermometer denoted a low range, the sensations did not indicate excessive cold.

On the night of the 8th of this month, a slight fall of snow is said to have taken place, and again on the 13th, the amount on both occasions being only ·042 inch.

On the 20th of the month, the temperature of the air at 2 p.m. was 25° Fahr.; at 9 p.m. it had descended to 17°. A faint breeze prevailed from the northward; there was no snow upon the ground; the sky was clear, except that a few stratous clouds hung about the horizon.

On 22nd, the self-registering thermometer showed that during the preceding night the temperature had descended to 5·5°, and at 3 a.m. it only reached 22°. The air was still, the sky clear, but the sensations did not indicate the amount of cold that actually prevailed. The temperature had undergone a rapid descent since the middle of the month. Towards the latter end of November, the river had become partially closed by ice; but a break having taken place, the season became for a short time mild again, the river reopened, and traffic upon it that had been interrupted was again begun, and continued for a few days. Upon the latter date, however, we learn that a sudden fall took place in the temperature. It so happened that a small schooner the property of Mr. Dent—the first to arrive under the treaty—had succeeded in making her way up the river, notwithstanding that the ice was rapidly increasing upon it, and reached that city on the 20th, just in time to be completely closed in for the remainder of the winter season.

On the 23rd the ice upon the river was sufficiently strong to bear sleighs, and thenceforward passengers, and a considerable

amount of traffic were conveyed in this way, all the boats being permanently fixed for the winter. So rapidly did the ice block up the river at Taku, that a detachment of troops having arrived there, and having had to be landed in two parties, one half only could be brought on shore. Before the gunboat by which they landed was able to return to the shipping, the ice had accumulated to such an extent as to completely oppose a barrier to all further communication, and the result was that the remaining portion of the detachments had to return to Hong Kong in the vessel by which they had come to the north.

By the 30th of the month of December, the minimum range of the thermometer is recorded to have reached 11° Fahr.; at 10 a.m. the thermometer only indicated 17°. A cold north wind prevailed, the sky was hazy, and the sensations indicated a very severe degree of cold. On the night between the 30th and 31st, the minimum thermometer indicated 3° Fahr.; at 3 p.m. the mercury stood at 18° Fahr. In the morning it was found that the moisture from the respiration had partially become frozen upon the moustache. Ice had to be broken from the block and melted, so as to be converted into water for the bath; and notwithstanding that a fire was lighted in my room, a thin film of ice formed in a few minutes upon the surface of the water that had been put in a tepid state into the bath tubs. Water standing in a basin not more than a yard from the fire became during the day converted into ice; but then, it must be observed, our grates were not quite so well adapted to throw out heat as those in English drawing-rooms are.

Even already meat and game had become firmly frozen; joints had to be thawed before being cooked; bread was so hard as to require great force to cut it, unless used while fresh from the oven. Oils and several other articles in the medical stores became masses of ice, bursting their bottles during expansion. Porter and ale became frozen in the casks in which they stood, and in some instances were solidified in bottles as they lay in our cellars.

JANUARY, 1861.

The following Table gives an abstract of the observations taken during the month:
The strength of troops—British, 3113; *Seikhs,* 289. *Total,* 3402.

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
1	2·	29·	27·	30·36	30·43	00·07	82	2	8	—	
2	9·8	34·	24·2	30·21	30·38	·17	72	—	9	1	
3	14·1	34·	19·9	30·15	30·20	·05	Dryness great	—	19	—	One case of diarrhœa with fever admitted: died. Sensations indicated warmth and moist atmosphere. In afternoon, calm. Hygrometer 35°—29° Fahr.
4	20·1	34·	13·9	30·26	30·31	·05	71	1	17	—	
5	20·1	27·	6·9	30·26	30·31	·05	72	2	8	—	
6	12·5	23·5	11·	30·32	30·37	·05	70	4	22	—	One case of fever admitted with hepatitis: recovered.
7	8·1	27·	18·9	30·23	30·34	·11	55	1	16	—	Frozen game and fish for sale in market.
8	13·5	29·	14·5	30·19	30·24	·05	70	4	16	1	
9	17·	23·	6·	30·42	30·46	·04	Under 49	4	13	1	Hygrometer 27·8°—24° Fahr.
10	10·5	27·	16·5	30·60	30·68	·02	67	3	21	—	
11	12·	26·	14·	30·51	30·61	·10	Not noted, slight snow	1	16	—	Slight snow fell; no wind.
12	5·	20·	15·	30·36	30·50	·14	100, slight snow	2	18	—	Slight snow fell. A case admitted of diarrhœa with fever; another of catarrh and hepatitis. Temperature in sun 95° Fahr.
13	10·1	19·	8·9	30·45	30·61	·16	57	4	17	2	Dust-storm during eight hours; wind north. Sensations indicated great cold.
14	·8	20·1	20·9	80·46	30·55	·09	Dryness great	1	13	—	On board "Slaney" in the river. Thermometer was 4·8°. A case of frost-bite admitted. The sensations indicated more warmth than yesterday; wind 0. Hygrometer 25°—19° Fahr.
15	5·2	26·	20·8	30·40	30·50	·10	58	1	18	—	One case admitted of fever with pneumonia: recovered. One of fever and pleuritis admitted: recovered.
16	7·	30·	23·	30·36	30·39	·03	Dryness great	1	22	1	One case admitted of fever and hepatitis. Hygrometer 24°—19° Fahr.

JANUARY—*continued.*

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
17	5·	30·	25·	30·40	30·43	·03	Not noted	—	16	1	One case of fever, was subsequently seized with phthisis: died. Air clear, and felt warm.
18	10·	33·	23·	30·36	30·61	·15	Dryness great	1	16	2	One case admitted of catarrh and diarrhœa. Almost calm. Hygrometer 32·8°—27·8° Fahr.
19	9·	30·	21·	30·57	30·71	·14	52	1	15	1	
20	11·6	30·	18·4	30·48	30·62	·14	Dryness great	1	20	—	Hygrometer 25·5—20·9° Fahr.
21	11·1	31·	19·9	30·39	30·46	·07	Dryness great	—	14	—	Hygrometer 26°—19·5° Fahr.
22	10·	35·	25·	30·41	30·46	·05	90	3	17	2	One case of fever and pneumonia admitted: recovered.
23	14·	36·	22·	30·42	30·47	·05	53	1	15	—	One case admitted suffering, as believed, from rheumatism, had variola.
24	14·	38·	24·	30·32	30·39	·07	55	—	23	1	
25	14·	36·5	22·5	30·38	30·41	·03	Dryness great	2	10	1	One case of fever, seized with peritonitis, then dysentery: invalided. Hygrometer 32°—27·4° Fahr.
26	16·	34·	18·	30·33	30·39	·06	Dryness very great	3	20	1	Sensations indicate great coldness; wind moderate, from north-east. Hygrometer 31°—18·8° Fahr.
27	19·	31·	12·	30·26	30·34	·08	64	2	14	—	Sensations still indicate greater cold than actually prevails; wind north-east, moderate.
28	13·6	26·	12·4	30·26	30·36	·10	44	2	14	1	Sensations indicate great cold and dryness.
29	17·8	24·	6·2	30·30	30·42	·12	47	3	10	2	Sensations recorded as severely affected by cold. Catarrhs and illness noted as increasing.
30	4·5	24·	19·5	30 31	30·46	·15	86	2	16	3	Wind high, from north-west, and piercing.
31	0·6	26·	25·4	30·31	30·38	·07	Dryness very great	1	14	2	One case admitted of fever and hepatitis. Wind moderate, south-west. Sensations feel warmer. Hygrometer 24·8°—19·8° Fahr.

The increase in the number of pulmonic diseases admitted is apparent during the prevalence of the greatest dryness, with a low mininum temperature. Liver diseases seem to have increased on the 1st, considerable descent of the minimum temperature, with perturbations in reading of barometer, and high state of ozone. Variola, it may be observed, prevailed considerably during the middle of the month, when the minimum was below 10° Fahr., and at the same time there was a liability in men to suffer from a combination of diseases. The weather during the month generally was fine; sensations indicated dryness of the atmosphere; wind moderate. The highest daily range of thermometer was 27° Fahr., and occurred on the 1st. The smallest was 6° Fahr., and occurred on the 9th.

An analysis of observations taken during the month gives the following results, namely:

	To 9 A.M.	To 3 P.M.	To 9 P.M.
The mean maximum temperature was	21·7	28·7	26·8
„ „ minimum „ .	10·8	17·0	16·9
The actual mean „ .	16·2	22·8	21·8

The highest degree attained during the month, viz., on the 24th, was . . . . . 38·0
The lowest degree reached, viz., on the 14th, was . 0·8
The mean monthly temperature was . . . . 20·2
The greatest daily range throughout the month, viz., on the 1st, was . . . . . 27·0
The smallest was on the 9th inst. . . . . 6·0
The greatest monthly range was . . . . 38·8
The mean daily range of the thermometer during the month was . . . . . 17·8
The average amount of vapour in the atmosphere on twenty days of the month was . . . . 65·0
On two days, the amount was not noticed.
On nine days, the degree of dryness was so great that Glaisher's tables did not indicate it.
The average of these gave for the dry bulb, 28°; for the wet, 21°; but the variety shown and represented in the tables was so great, that on one occasion—the 26th inst.—while the dry reached 31°, the wet was at 18°: thus indicating a remarkable degree of dryness with low temperature.
During twenty-six days, on which the presence of ozone in the atmosphere was perceptible, the average amount according to scale was . . . 2·0
On fine days its presence was not perceptible.
The general character of the weather during the month was dry and cold.
No rain fell throughout the month.
Snow fell on two days, amounting, according to the gauge, to inch . . . . . 0·103
The prevailing wind was from the north.
The directions from which the wind blew were as

follow: namely, northerly, on 12 days; southerly, 6; easterly, 6; westerly, 3; and on 4 days the atmosphere was calm.

The monthly rate of mortality among the British troops would amount for the year to, per cent. . 7·80

The rate of admissions on account of climatorial diseases, among British, was as follows (including all hospitals):

Fevers, per cent. of strength	1·50
Pulmonic diseases	4·06
Diseases of stomach and bowels . . .	2·07
Rheumatic diseases	0·54
Liver diseases	0·36

The general characters of the weather during January, is described as fine, dry, and bracing. During the month a trivial case of frost-bite occurred in a soldier of irregular habits who was for his irregularities committed to the cells. While walking in the open country the face and ears suffered acutely from the dry, cold winds; and the Chinese took into general use padded caps for the protection of the latter organs.

On the 11th of the month it is recorded that the minimum temperature of the preceding night had been 10° Fahr.; at nine the thermometer indicated 17°; at seven p.m., 22·5°. On this occasion we had a slight fall of snow; the total amount being only ·089 inch. The air was close, the flakes fell soft, like so much down. They were readily seen to consist of six-rayed stars, each ray feathered, as represented in some of the elementary works on meteorology, and in accounts of some voyages to the arctic regions. Towards evening they became irregularly round, as if so many small fragments of ice, yet the sensations alone indicated mildness of temperature.

Some information in reference to the divisions of the winter season by the Chinese themselves having come under my observation, and as it may be interesting in a scientific point of view, I will simply transcribe as nearly as possible the translation of the original document as given to me by Dr. Lamprey.

According to the 'Royal Chinese Almanac,' published by authority at Pekin, the 11th of January (1861) is the first day

of their twelfth month, and fourth day of their third period of cold. Each period consists of nine days, and they reckon nine of these periods. It therefore follows, according to their calendar, that the first commenced upon the 20th of December, and that the last will end on the 2nd of March.

The present season is said to be the coldest, but subsequent experience showed that in this respect the calculation of the Chinese is not quite correct. The present, however, is the period when ice is principally collected and stowed away for summer use. A brief account of the process may not be uninteresting in this place.

Numerous parties of men are now busily engaged digging huge blocks of ice from the thick coating that covers the river. The blocks that are quarried out are each about two feet and a half long, one and a half broad, and their general thickness about a foot; for their upper surface being covered more or less deeply with obnoxious matters, a layer of three to four inches is broken off by means of the picks before final removal of the block itself. Other men, by means of ropes, on each of which was a running noose, the more easily to secure the quarried blocks, were busily engaged in dragging them up the bank by means of inclined planes placed for the purpose, or dragging them along the narrow streets towards the houses in which they were finally packed away.

The construction of one of these pits, visited by me, was very simple. It may be simply said to have consisted of four walls of mud, very thick at the base, and becoming somewhat narrower towards the top; a drain stretched away from about the centre of the base, evidently for the escape of water that might percolate from the solid blocks. The length of the edifice was considerably more than a hundred feet; the breadth upwards of fifty; men were busily occupied stowing away in this huge pit the blocks of ice as they were brought—for it will be observed that as yet the roof had not been put on; the top of the wall being several feet above the level of the street, the ice had to be drawn up an incline, as it had in the first instance been from the river to the summit of the bank. All the blocks being cut as nearly as possible of the same size, they fitted together so

well when placed in their proper position, as to form an almost perfectly compact mass.

It was explained to me that this pit had been already filled to a depth of ten feet; upwards of three feet still remained unfilled. It was evident that so soon as this should be packed full of ice, a roof would be placed over all, and thus the whole closed in.

As elsewhere mentioned, I had long afterwards an opportunity of seeing one of these pits, and found that it was excavated to a depth of several feet in the ground, so that it was in reality deeper than I had at first supposed; I had also occasion to remark that in some pits of similar construction, fruits of various kinds had been preserved among the contained ice.

I may here observe that throughout January and February, more especially the former, the operations of quarrying and housing the ice are here busily pursued. In moonlight nights the scene upon the river is then animated and picturesque in the extreme. The absence of sunlight is considered a great advantage. Crowds of people then pursue their occupation upon the river, some digging the ice, some carrying it away; and the clear rays of the moon, uninterrupted as they are in this clear atmosphere by a single cloud, throw a glare upon the scene that renders it as beautiful as it is strange.

It is of course necessary that the people thus engaged should be completely protected from the cold; they are accordingly so thickly enveloped in furs and quilted clothes, that their breadth and proportions generally remind one of the pictures of Esquimaux so familiar to all readers of books of travel.

Their feet are well protected from the cold by huge leather *cases* lined with fur and straw, and secured upon them by means of thongs of leather or rudely made tapes; a warm hood envelopes the head, and *mits*, as uncouth in proportion, and composed of similar materials to the "sandal shoon," protect the hands.

On the 12th of January, I note that the thermometer had during the night descended to 5° Fahr., that at 9 a.m. it stood at 5° Fahr., and at half-past three o'clock in the afternoon was only at 14·5°. The sky was clear, the breeze scarcely perceptible; snow lay fine and white upon the ground, although

its depth was extremely trivial. So intense was the cold on this occasion, that as we walked along not only did the moisture of the breath become deposited as icicles upon the moustache, but even descended to our beard. One of our party had the tips of his eyelashes covered by small icicles of hoar frost; yet, with the active exercise we were at the time indulging in, we felt comfortably warm. We had ample proof, however, that the severity of the climate had already begun to tell injuriously upon the health of both officers and soldiers, who had previously served much in hot climates.

On the 13th, a severe storm of wind came on; first, from various points of the compass, latterly becoming steady from northward. Dust and snow were blown about, penetrating into our rooms through the various crevices that existed in the flimsy fronts, which, as already noted, consisted chiefly of thin deals of pine, covered over inside with paper. The thermometer at three p.m. had only reached 14° Fahr., but the sensations indicated even a greater degree of cold than that shown by the instrument. It may seem strange to those of my readers accustomed only to the climate of England that dust and snow should be drifted about by the same storm. So extremely dry is the climate in the north of China during the greater part of the winter season, that almost all the moisture that had been contained in the upper stratum of soil, becomes so completely removed by evaporation that the particles of earth are not united as they would be by means of ice in a more moist atmosphere; thus, on the occasion of wind-storms, not only are they perceptibly affected by the electricity then set free, but are like other loose objects liable to be carried hither and thither by the passing breeze.

On the 14th, the temperature was marked as having on the previous night descended to zero; and at nine a.m. it was only 7° Fahr. There was now comparatively little wind, and consequently the sensations indicated a greater degree of warmth than what had prevailed on the previous day. Walking was now most enjoyable, and there is no doubt that, for those who are able to indulge in it, it is by far the most healthful exercise at this season. Riding, unless after hounds or hawks, is for the most part dull, and particularly apt to induce coldness of

the feet or a severe chill of the system generally. By the 26th of January, the note was recorded in the meteorological report that the minimum degree of cold during the preceding night had been 17°; at 9 a.m. it was 21·5°, and at 4 p.m. 29°. During the preceding few days, the minimum range of the thermometer had descended less and less low, but no corresponding increase took place in its upward range. The indication of cold by sensations alone depended more upon the prevalence and direction of wind than upon mere temperature as indicated by the thermometer, a northerly wind being, as might be expected, the coldest.

It may be observed in this place that the degree of winter cold at Tein-tsin is much greater than ought to be the case, if we take into consideration only its latitude and elevation above the sea. To account for this circumstance, we must bear in mind the facts that the country northward from it is for a very great distance little more than an arid plain, devoid alike of forests and the larger kinds of vegetation; thus it the more readily parts with the warmth imbibed during the hotter periods of the year, and interposes no barrier to the cold blasts that come sweeping down from the high mountains of Thibet and Siberia.

It must not be supposed that a permanent rise took place in the temperature from the time just mentioned. Several descents subsequently took place, and, as we shall see as we proceed in this account, some to even a lower degree than has yet been recorded. The line of daily mean temperature would, if projected, exhibit a succession of variations of greater or less extent, both horizontally and perpendicularly, but henceforward with a general upward tendency. The variations not only in this respect, but also in the other observable meteorological conditions are so regular in their occurrence from year to year, that the natives, who consider themselves to be more "weather-wise" than their neighbours, assert positively that they are able to predict these changes almost to a day.

FEBRUARY, 1861.

The following is an abstract of the observations taken during this month:
The strength of the force was—British, 3473; *Seikhs,* 291. *Total,* 3764.

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
1	8·8	28·	19·2	30·33	30·39	00·06	39	—	8	1	A dust-storm; wind 0 and north-west. One admitted with dyspepsia, then pneumonia; one with chronic rheumatism, then fistula.
2	7·	36·	29·	30·35	30·47	·12	Dryness very great	1	20	—	Sensations out of doors agreeable, day calm. Hygrometer 29·5°—23°.
3	8·	30·	22·	30·60	30·61	·01	39	1	10	1	Sky overcast.
4	20·	33·	13·	30·50	30·59	·09	Not noted	1	10	—	Very faint fall of snow; wind east-north-east and east-south-east. One case admitted of bronchitis and diarrhœa.
5	13·	30·	17·	30·46	30·53	·07	78, snow	—	19	—	One case of hepatitis, then pneumonia.
6	22·	31·	9·	30·18	30·30	·12	91, snow	3	15	1	Four inches of snow fell; wind north and north-east; day felt mild.
7	16·5	34·	17·5	30·22	30·39	·17	70	5	12	—	The continued cold weather severely affects the sinews.
8	13·	24·5	11·5	30·31	30·41	·10	66	4	11	—	
9	3·	24·	21·	30·20	30·30	·10	72	6	19	—	Sky clear.
10	10·	30·	20·	30·39	30·48	·09	55	6	13	1	Heat of sun sufficient to melt snow on eaves.
11	4·	27·	23·	30·46	30·54	·08	48	5	12	—	Foggy. Sensations indicate intense cold.
12	1·5	22·5	24·	30·43	30·60	·17	68	8	19	—	Sensations very cold.
13	3·8	22·5	18·7	30·51	30·63	·12	Dryness very great	3	16	1	Clear; wind north-west, piercing. One case of catarrh, acute hepatitis. Hygrometer 21°—17·5°.
14	0·8	25·	25·8	30·25	30·37	·12	71	8	13	—	
15	8·	23·	15·	30·24	30·27	·03	Not noted	·4	13	—	Atmosphere felt moist; atmosphere hazy. One case admitted of rheumatism and hepatitis.

FEBRUARY—*continued.*

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
16	14·6	28·	13·4	30·16	30·26	·10	76	7	19	1	Hazy; moisture evident to sensations.
17	20·5	37·	16·5	30·30	30·43	·13	Dryness very great	6	14	—	Dust floating in atmosphere; wind south-south-east, west by south, and north-west. Hygrometer 35°—28°.
18	15·	31·5	16·5	30·60	30·61	·01	Dryness very great	6	6	—	Dust floating in atmosphere; wind north-west and south-west. Hygrometer 28°—22·5°.
19	8·	36·	24·	30·52	30·63	·11	Dryness very great	4	15	1	First thaw on surface of ice on the river; wind south-east and south-west. One case admitted of catarrh and diarrhœa. Afternoon felt genial. Hygrometer 34·5°—29°.
20	15·	42·	27·	30·42	30·47	·05	53	6	14	—	One case of fever with pleuritis.
21	20·	43·	23·	30·46	30·53	·07	85	6	9	—	Flocks of wild geese seen flying north; wind south-west.
22	25·	43·5	18·5	30·34	30·43	·09	77	7	20	—	Air had quite "a spring feel."
23	29 8	46·	16·2	30·31	30·32	·01	83	6	14	—	Cirri appearing in south; wind south, and mild. Cases of fever, all in artillerymen; one case of the fever with chest symptoms; one catarrh with hepatitis.
24	30·	44·	14·	30·13	30·26	·13	92	8	13	—	Clouds increasing.
25	30·	38·	8·	30·29	30·59	·30	59	3	10	—	A dust-storm. Ice on river fast melting. Traffic on it decreasing; wind south-east to north-west.
26	21·8	38·	16·2	30·60	30·66	·06	82	3	13	—	Ice on river reported "dangerous." One case of fever with jaundice.
27	14·	39·	25·	30·46	30·47	·01	61	1	13	—	One case of fever, ended in phthisis.
28	21·	37·	16·	30·36	30·43	·07	59	2	14	—	Wind south-west. Feeling of cold considerable.

The greater part of February was principally cold. A few changes of weather and wind took place during it, and were grateful to the sensations. Climatorial diseases and rate of mortality decreased considerably. Cases of combination of disease in the same subject were somewhat frequent; variola, which during January had threatened to become epidemic, decreased. There was very little rheumatism, and fresh attacks of hepatitis were very scarce.

The following are some of the results obtained from these observations, namely:

	To 9 A.M.	To 3 P.M.	To 9 P.M.
The mean maximum temperature was	24·8	33·4*	31·5
The mean minimum . . .	14·3	18·3*	21·0
The actual mean	19·5	25·8	26·2

The highest degree attained during the month was, on the 23rd . . . . . 46·0

The lowest degree, reached on the 12th instant was (minus) . . . . . 1·5

The highest daily range occurred on the 2nd, and amounted to . . . . . 29·0

The smallest daily range was observed on the 25th. It was . . . . . 8·0

The mean daily range of the thermometer was . . 18·5

The average amount of vapour in the atmosphere on 21 days of the month was . . . . . 67·0

On two days the state of the hygrometer was not noted.

On five days the dryness was so great that Glaisher's tables did not indicate it.

The average state of the hygrometer during these five days would give for the dry bulb 29·6, and for the wet 24·0; the greatest difference being on the 17th of the month, when the former was at 35°, and the latter at 28° Fahr.

During twenty-six days on which the presence of ozone in the atmosphere was perceptible, the average amount was . . . . . 5·0

On two days its presence was not perceptible.

The general character of the weather during the month was dry and cold.

No rain fell throughout the month.

Snow fell on three days, amounting, according to the gauge, to, inch . . . . . 0·065

The wind during the month was variable; thus, it was northerly on 8 days, southerly on 7, westerly on 3, easterly on 4, and calm on 6.

The monthly rate of mortality among the British would amount for the year to, per cent. . . . 2·40

* From twenty-six days' observation.

The rate of admissions on account of climatorial diseases among the British was as follows (including all hospitals) :

Fever, per cent. of strength . . .	1·20
Pulmonic diseases	2·85
Diseases of the stomach and bowels . .	1.23
Rheumatic diseases	0·54
Liver diseases	0·23

The month of February set in with a minimum temperature of 8·5°; at 9 a.m. the thermometer indicated 20°, and to the sensations this temperature felt mild. In the afternoon, however, a cold, cutting wind set in from the north; the horizon became obscured by impalpable dust, giving to the sun the same lurid glare that is so familiar in Upper India during the prevalence there of the hot winds. Yet, as we walked out at Tein-tsin on the present, how very different were the sensations from what they used to be in India under the circumstances mentioned.

A very material rise had taken place in the temperature by the 4th of February; the minimum then marked was 20° Fahr., at 9 a.m. 23°, and at noon 30° Fahr. A slight fall of snow had taken place during the previous night, and a few flakes continued to fall during the forenoon. A few white, filmy clouds appeared in the sky, and the sensations indicated that a very favorable change had taken place in the state of the weather.

For some time back the number of people to be met with upon the street had considerably diminished, many persons being, no doubt, deterred by the severity of the weather from leaving their houses unless under some pressing necessity; now, however, it was apparent that the streets were once again becoming crowded as before; bustle and activity, which had for a short time decreased, were now recommencing, and the favorable weather, added to the near approach of the New Year festival, brought many out in search of pleasure and amusement, as is said to be sometimes the case among western nations on similar occasions with them.

On the sixth of the month, with a minimum temperature of 22°, and at 2 p.m. 29° Fahr., snow fell gently, in small, fine flakes, which, as they collected to some slight depth on the

ground, gave to the foot in walking the impression that a tendency to thaw existed; the atmosphere felt mild to the sensations, yet there was a considerable amount of sickness among both officers and men of the force, especially among those who had served during considerable periods in hot climates.

The following day a thaw actually set in for a time, indicating the correctness of the impressions just noted as having been conveyed. Shortly afterwards, however, another fall of snow took place, being the heaviest that occurred during the season. By the 11th the minimum had again descended, reaching as low as 4° Fahr., and at 9 a.m. being at only 6° Fahr., a fog hung over the earth, and the sensations gave an impression of intense cold. On the 12th the thermometer indicated the greatest cold that had been reached during the winter. The minimum during the previous night had been 1° Fahr. below zero in the dense suburbs where we were stationed; and we were informed that on board the gunboat "Slaney," which had been grounded in the river about seven miles from the town, the lowest degree marked on the same occasion had been 5° Fahr. The temperature on this occasion, at 9 a.m., was only 6° Fahr., the sky clear, the atmosphere dry, the sensations indicating great cold, and the actual cold sufficient to occasion the deposit of a thin pellicle of ice, during the few minutes I was occupied in taking my bath, upon tea that had been brought to me hot immediately prior to commencing my ablutions. Here we have no means of maintaining a fire alight in our bedrooms throughout the night. It is, therefore, by no means pleasant to awake and find one's breath congealed into hoar frost upon the blankets and furs among which we had endeavoured to "tuck" ourselves up as protection against the intensity of the cold that prevailed.

A thin coating of snow still lay upon the ground, giving to the immediate neighbourhood of the city a very peculiar appearance, where the succession of natives' graves—some conical, some dome-shaped, others an oblong square—rose up at short intervals as so many white mounds.

From this time the increase of temperature was rapid. On the 17th the minimum noted was 20° Fahr.; and by 9 a.m. the thermometer stood at 25°. The sensations indicated a pleasant degree of warmth; and during the forenoon the contents of

the streets, which had hitherto been a mass of solid ice, began to thaw; a peculiar haze had in the early part of the day obscured the sky, and about noon a high wind set in from the southward, continuing throughout the remainder of the day to blow with considerable force.

During the few following days the range of the thermometer continued to vary considerably, but its upward range increased. On the 19th, and though the minimum temperature had again descended so low as 8° Fahr., and that at 9 a.m. was only 19·8° Fahr., the day became exceedingly agreeable. The wind had quite ceased; the haze already mentioned had cleared away, and the afternoon sun shone out with considerable power. The snow had almost all disappeared; small pools were forming here and there upon the ground. The ice upon the river is in many places covered with water to the depth of an inch; sleighs are becoming decidedly fewer than they were a short time ago, and people are beginning to move about their boats, breaking the ice immediately around those that became bound by it in the river, and repairing those that had been drawn up for security into the primitive-looking docks that have been elsewhere mentioned as occurring at intervals along either bank of the river.

So rapid was the thaw, that on the 20th of the month the streets had become ankle deep with mud, and other matters of an even more objectionable nature, rendering a walk through the town a matter anything but agreeable.

By the 22nd the minimum had increased to 25° Fahr., and in the afternoon the temperature in the shade was 43°. The atmosphere conveyed to the sensations what is so well known at home as a "spring feeling." Thaw was progressing rapidly. Flocks of birds that had in the earlier part of the winter migrated southward, were now seen pursuing their return flight; and what was of considerably more personal importance to us, was the fact that those among us who had suffered in health during the cold period, began now to experience an improvement.

By the 27th of this month, the temperature in the sun and a sheltered situation had become agreeable to the sensations. The wind, however, continued cold; but so great had the effect of the solar heat already become upon the river ice, that it had decreased in thickness from upwards of fourteen inches to seven.

MARCH, 1861.

The following is the summary of the observations taken:
The strength of the force—British, 3378; *Seikhs,* 290. *Total,* 3668.

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
1	26·	41·5	15·5	30·40	30·50	00·10	58	6	9	—	Slight snow; wind southerly. Farming operations begun.
2	22·	50·	28·	30·50	30·56	·06	Not noted	4	6	—	Hazy; wind southerly.
3	29·5	41·	11·5	30·29	30·37	·08	83	4	12	—	Slight snow; calm.
4	26·5	45·	18·5	30·34	30·38	·04	54	4	4	1	Wind north, and high.
5	24·	49·	25·	30·25	30·31	·06	34	3	6	—	
6	22·	52·	30·	30·14	30·22	·08	56	1	10	—	A mild day; buds of a "quaking ash" bursting.
7	28·	43·	15·	30·24	30·44	·20	41	4	11	—	A dust-storm! wind south-east and north-west.
8	18·	40·	22·	30·42	30·51	·09	34	—	8	2	Wind north, cold.
9	19·	44·	25·	30·37	30·50	·13	45	4	6	—	One case of hæmoptysis, and diarrhœa; one of rheumatism and hepatitis.
10	20·8	53·	32·2	30·14	30·26	·12	39	4	7	—	Wind southerly, mild. One case of bronchitis and hepatitis.
11	31·5	54·	22·5	30·23	30·35	·12	35	3	12	—	River ice broke up.
12	27·8	60·	32·2	30·15	39·28	·13	38	2	9	—	Spring commenced, natives began work in gardens. One case of bronchitis and dysentery.
13	27·2	50·	22·8	30·24	30·40	·16	49	2	15	—	Cloudy; wind southerly.
14	28·	54·	26·	30·04	30·12	·08	Not noted	2	10	—	Rooks associating. One case of jaundice.
15	36·	59·	23·	30·02	30·16	·14	37, rain	—	14	—	Slight rain; wind variable and 0.
16	35·	60·	25·	30·21	30·27	·06	64	4	11	—	Day "balmy."
17	31·	57·	26·	30·12	30·27	·15	100, rain	4	5	—	Slight rain; wind easterly, faint. Sensations "spring-like." A few insects appeared. One case of jaundice.

MARCH—*continued.*

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
18	35·2	57·	21·8	30·08	30·16	·08	55, rain	8	8	—	Heavy rain; wind variable. A few shoots of vegetation above ground. Elms in flower. One case of fever with diarrhœa.
19	34·	51·	17·	30·11	30·21	·10	45	6	12	1	A dust-storm; wind northerly. One catarrh with rheumatism.
20	31·	52·	21·	30·16	30·29	·13	53	2	8	—	
21	28·5	62·	33·5	29·88	30·04	·16	44	5	13	1	One case of diarrhœa with fever admitted.
22	36·5	60·	23·5	29·88	30·00	·12	52	1	15	—	Sky clear; wind north-west, slight.
23	36·6	67·	30·4	29·75	29·81	·06	52	2	20	—	Sun unpleasantly strong when striking on the bare head. One case of diarrhœa and phthisis.
24	37·	59·	22·	29·91	30·00	·09	43	2	6	—	A dust-storm; wind variable. Gulls on river.
25	32·5	55·	22·5	30·15	30·25	·10	42	—	14	1	A few leaves of grass unfolded on banks. One catarrh and diarrhœa admitted.
26	32·	57·5	25·5	30·23	30·26	·03	47	2	10	2	Wind east. Sensations cold.
27	28·2	50·	21·8	30·19	30·28	·09	Not noted	2	13	—	Slight snow. One case of hepatitis and rheumatism.
28	30·	62·	32·	30·21	30·24	·03	51	2	17	—	Grain crops bursting the earth. One case of fever and diarrhœa. One of diarrhœa and tonsillitis.
29	34·	63·	29·	30·22	30·29	·07	51	2	7	1	Morning mild, evening "cold."
30	44·5	68·	23·5	30·20	30·23	·03	46	3	9	—	
31	34·	63·	29·	30·15	30·26	·09	40	3	6	—	Sun at noon unpleasant.

An increase of 22° took place in the temperature during March, as compared with February. The occurrence of fevers increased; chest affections diminished by one half; diseases of the bowels slightly increased; rheumatism had about the same rate of occurrence; and "liver" decreased. Wild fowl were observed proceeding northward in great numbers. Farming operations were fully carried on. Traffic commenced on the river. The rapid change from rain to dust with wind is noted on the 18th and 19th. The sensations during the forenoons and afternoons were often agreeable as at home, and it was remarked that a degree of vapour in the atmosphere which, with a low temperature, would be noted "dry," did not produce that sensation, but the contrary, with a moderately high thermometer.

The subjoined contains an abstract of the observations taken. Thus we learn that the—

	To 9 A.M.	To 3 P.M.	To 9 P.M.
Mean maximum temperature was .	41·9	54·6*	51·0
Mean minimum	29·8	36·3*	37·7
Actual mean	35·8	45·4	44·3

The highest degree attained during the month was .	68·0
The lowest degree reached was	18·0
The mean monthly temperature was	41·8
The greatest range during the month was . . .	50·0
The highest daily range occurred on the 21st. It was	33·5
The smallest, namely, on the 3rd, was . . .	11·5
The mean daily range of the thermometer was . .	24·2
The average amount of vapour in the atmosphere on twenty-eight days was	46·0
On two days the state of the hygrometer was not noted.	
During twenty-eight days on which the presence of ozone in the atmosphere was perceptible, the average amount was	3·0
On three days its presence was not perceptible.	
The general character of the weather during the month was that of rapid change from cold to heat.	
Rain fell on two days; the total amount, according to gauge, being, inch	0·695
Snow fell on two days, the amount in inch . . .	0·090
The prevailing wind was from south. It was northerly on 11 days, southerly on 10, easterly on 7, westerly on 1, and calm on 2.	
The monthly rate of mortality among the British during the month would amount for the year, to per cent.	3·12

The rate of admissions on account of climatorial diseases among the British was as follows (including all hospitals):

Fevers, per cent. of strength . . .	1·62
Pulmonic diseases	1·09
Diseases of stomach and bowels . . .	1·48
Rheumatic diseases	0·50
Liver diseases	0·53

* By interpolation. Observations wanting on two days.

March set in with a slight fall of snow; the minimum temperature marked was 26° Fahr., and at 9 a.m. 30·8° Fahr. On the following day a high wind from the south set in, rendering the sensations given by the atmosphere unpleasant, and the reverse of bracing. An occasional slight fall of snow during the 3rd and 4th indicated that the atmosphere was gradually becoming more humid. The ice had now become completely covered with water from the gradually melting of its upper surface, and traffic had entirely ceased upon it.

On the 7th of the month a dust storm occurred, which deserves a somewhat detailed notice. Early on the forenoon of that day a high wind set in from the northward; the sky became in appearance what the Chinese describe as brassy, that is, it assumed the yellow lurid hue so familiar in the upper provinces of India, as preceding what is then called "a devil," or revolving dust-storm.

It did not appear that the wind which prevailed had at any time a circular motion; in fact, the electrical phenomena were what alone deserved especial notice. The electrometer indicated that a rapid current of positive electricity was moving from the atmosphere towards the earth; its intensity being so great that a chain of sparks was apparent when the extremities of the atmospheric and terrestrial portions of the conductor were brought into near proximity to each other. Whenever the extremity of the former was brought into contact with the surface of the earth, a very interesting phenomenon became apparent, the dust was repelled from the end of the wire, or, as it were, blown away, leaving a course, as the wire was coiled along, as clear from sand as if the dust had been carefully brushed away. It particularly deserves to be noted, however, that the dust was not simply repelled direct onwards, or to either side; on the contrary, the current thus created had a distinct tendency upwards, but it was not possible to say whether it at the same time acquired anything approaching to a circular movement upon its own axis. The scale upon which the experiment was made was too small to give more than very partial results.

With a view to ascertain how far the diseases of the troops might have been affected by this storm, Dr. Bindon, the medical

officer in charge of the General Hospital, was requested to examine the state of the patients immediately after its occurrence, and the following are some of the results of his inquiries:

1st. As regards bowel diseases.—Sixteen patients in hospital affected with these, experienced distinct aggravation of their symptoms; sixteen were not affected in either way; two cases were admitted from barracks; two patients in hospital died during the day of the storm.

2nd. Intermittent fever.—Only one patient suffering from this form of disease seems to have been at all affected. He had no regular paroxysm, but suffered during the day from general febrile disturbance, with great prostration.

3rd. Paralysis and rheumatism. One of the patients affected with these diseases suffered during the day from more severe rheumatic pains in his extremities than ordinary, and from general febrile disturbance.

There is no doubt but that the human body is powerfully affected by the electrical condition of the atmosphere. This is alluded to as follows by Sir Ronald Martin:

"It has been long known that animals waste and perish when they have been deprived of their positive electricity by being attached to the opposite pole of a galvanic battery. When the human body, on the other hand, has been for some time exposed to an atmosphere of a negative electricity, it is believed by many to become thus incapable of resisting the various causes of disease, as the exhalations from the earth, the force of epidemics," &c.

On March 11th the minimum of the thermometer marked was 32° Fahr. At 9 a.m. the mercury stood at 40° Fahr.; a northerly breeze prevailed; and on this day, as already mentioned, the ice upon the river suddenly broken into fragments, and floated down the stream.

On the 15th of this month the first shower of rain fell that had occurred since October. It was not preceded by wind, nor by any evident perturbation of the atmosphere. A great fall occurred during the night; and it may be remarked that for some time afterwards from this, nothing could be more agreeable than the climate here; in fact, so rapid had been the increase

of temperature, that already we felt the heat actually unpleasantly great.

On the 17th the remark appears in my journal that the feelings now conveyed by the atmosphere are precisely similar to those experienced in England on a fine spring day. A few clouds began to collect in a previously clear sky, and presently, the whole coalescing, a slight fall of rain took place, attended by gusts of wind from the southward. The rain increased on the following day, so as to render the streets almost impassable, so deep was the mire and gutter; while in consequence of the defects of drainage, and sloping nature of the streets, the water accumulated in some of the more hollow places to a depth of upwards of two feet, that is, so as to reach the girths of horses.

On the 23rd the minimum marked was 36°, the maximum during the day 67°, but a temporary fall taking place, the minimum on the 27th had descended to 29° Fahr. At 9 a.m. the temperature was 37°, the sky became hazy, and another slight fall of snow occurred.

APRIL, 1861.

The following is a summary of the observations taken during this month:
The strength of our force—British, 3346; *Seikhs,* 289. *Total,* 3635.

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
1	35·	72·	17·	29·97	30·08	00·11	36	2	3	—	Buds of crab-apple trees unfolding, also rose bushes.
2	49·	74·	25·	29·94	29·98	·04	45	4	12	—	Peaches in flower.
3	43·	60·	17·	30·15	30·19	·04	48	5	10	—	Dust-storm; wind east. Willow buds unfolded and catkins apparent.
4	39·8	65·	25·2	29·99	30·05	·06	Not noted	4	9	—	
5	40·	67·	27·	29·80	30·08	·28	Not noted	4	19	1	Swallows first seen. One case of jaundice.
6	46·5	60·	13·5	30·08	30·11	·03	51	8	4	1	Slight rain last night.
7	45·	64·	19·	29·94	30·00	·06	41	4	7	1	
8	38·	74·	36·	29·84	29·93	·09	35	4	9	1	Unpleasantly warm out of doors.
9	47·	63·	16·	29·81	30·16	·35	46	6	7	1	Dust-storm; wind west. Caprilla *Bursa pastoris* in flower, also radishes.
10	37·5	65·	27·5	30·31	30·35	·04	50	2	11	—	Bustards in the market, cherry trees in flower.
11	37·	65·	28·	30·03	30·26	·23	32	—	13	—	
12	37·	66·5	29·5	30·22	30·25	·03	34	—	13	—	
13	39·	72·5	33·5	30·25	30·32	·07	28	—	9	1	
14	45·5	79·	33·5	30·16	30·25	·09	Dryness very great	—	11	—	Hygrometer 79°—52°.
15	43·	81·6	38·6	30·10	30·20	·10	28	—	4	—	
16	47·	82·8	35·8	30·00	30·15	·15	32	—	12	—	Hot wind from south-west.
17	51·	69·	18·	30·08	30·15	·07	41	—	14	—	Dust-storm.
18	45·2	76·	30·8	29·80	29·98	·18	33	—	10	—	Vines budding freely. One case of diarrhœa with fever admitted.
19	52·	69·	17·	29·83	30·02	·19	59, slight rain	3	13	1	Reptiles appearing.

APRIL—*continued.*

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
20	42·5	75·	22·5	29·94	30·03	·09	24	3	9	—	Syringa in flower.
21	43·8	87·	43·2	29·63	29·84	·21	Dryness very great	2	10	—	Hygrometer 84°—57·6°; wind south-west and hot. Crab-apple in flower. Electricity positive One case of diarrhœa with fever admitted.
22	63·6	84·	20·4	29·84	29·96	·12	Dryness very great	—	11	—	Hygrometer 80·5°—56·5°. Dust-storm. Violets, ononis, astrafolius, and luzula in flower.
23	59·	70·	11·	30·07	30·15	·08	48	—	6	2	A few drops of rain. Mushrooms in market.
24	46·	77·	31·	29·97	30·07	·17	25	2	12	4	A myosotis in flower.
25	48·5	83·	34·5	29·88	30·03	·15	25	3	11	1	
26	54·	87·	33·	29·90	29·99	·09	36	1	10	1	Dust-storm; wind east; electricity negative.
27	52·	78·	26·	29·82	29·88	·06	Dryness very great	—	10	—	Hygrometer 76°—51°. Electricity varying from positive to negative. Mulberry fruit forming.
28	51·	77·	26·	29·82	29·93	·11	24	—	4	1	Much dust. Elect. variable. One of pneumonia and fever.
29	47·	78·	31·	29·99	30·02	·03	33	1	10	—	Lettuces in market.
30	47·	80·	33·	30·00	30·09	·09	Dryness great	2	9	—	Hygrometer 66°—44°.

An increase of the maximum temperature of the month, as compared with March, of 19° took place. The greatest and the smallest decimal range occurred within three days, indicating the very great and sudden changes that take place in the climate here. Dust-storms and high winds were frequent during the month, and atmosphere generally dry. Fevers became increased in frequency on the ascent of the temperature above 80°, but during the whole month were fewer than they had been in March. Pulmonic diseases increased by one third; bowel affections were not materially altered in rate of occurrence; rheumatism decreased; and a trifling increase occurred in fever diseases, but still they were inconsiderable in number. During the month many birds of Europe appeared. A remarkable absence of ozone is noted between the 11th and 18th, but no particular circumstance connected with disease was observed during that period.

By the subjoined abstract we hear that the—

	To 9 A.M.	To 3 P.M.	To 9 P.M.
Mean maximum temperature was .	59·8	73·1	70·0
Mean minimum „ .	46·2	55·0	54·3
Actual mean „ .	53·0	64·0	63·1

The highest degree attained during the month was .	87·0
The lowest degree marked was	35·0
The mean monthly temperature was	60·0
The greatest range during the month was . . .	52·0
The highest daily range occurred on the 21st. It was	43·2
The smallest daily range, viz., on the 23rd, was . .	11·0
The mean daily range of the thermometer was . .	26·6
The average amount of vapour in the atmosphere on twenty-three days of the month was . . .	37·0
On two days the state of the hygrometer was not noted.	
On five days the hygrometer indicated a greater degree of dryness than the tables gave us the means of calculating. The average difference during these was from 77° Fahr. for the dry bulb, to 52·2° for the wet one. The difference between these two has varied from 22° to 27°.	
On eighteen days, during which the presence of ozone in the atmosphere was perceptible, the average amount was	3·0
On twelve days there was no ozone perceptible.	
The general character of the weather during the month was great dryness, and frequent dust-storms.	
Rain fell on one day only; the amount being, inch .	0·03
The prevailing winds were southerly.	
The directions from which they blew were northerly on 11 days, southerly on 13, easterly on 3. On no occasion during the month did the breeze come from the west, and on 3 days the air was calm.	
The monthly rate of mortality among the British would amount for the year to, per cent.	5·64

The rate of admissions on account of climatorial diseases among British was as follows (including all hospitals):

Fevers, per cent. of strength . . .	1·25
Pulmonic diseases	0·94
Diseases of stomach and bowels . . .	1·28
Rheumatic diseases	0·29
Liver diseases	0·35

The month of April set in with a mildness of temperature that was particularly pleasant to the sensations. The lowest of the thermometer was 35° Fahr.; at 9 a.m. it stood at 50°. Vegetation, which had been hitherto backward, now was appearing rapidly and luxuriantly. Sickness had much diminished, and the climate had attained a degree of moderation which, although highly appreciated, did not unfortunately last long.

Dust-storms which, during the month, occurred very frequently, first commenced on the 3rd, from the eastward. The temperature was on this occasion 56° Fahr. at 9 a.m., yet the sensations produced by the breeze were unpleasantly cool.

By the 14th of this month it was noted that the minimum temperature had risen to 45·6° Fahr.; at 9 a.m. it was 60°; the weather had, indeed, become already unpleasantly warm, so that a walk at 4 p.m. could not be indulged in without occasioning some feeling of discomfort.

Dr. Lamprey records that on the 16th and 21st of the month we experienced some approach to the hot winds of India. On these occasions the breeze came from the south-west, and so remarkable was the difference between the indications of the wet and dry bulbs of the thermometer, that on the first occasion this amounted to 19° Fahr., and on the latter to 27°.

In order to contrast this with what is observed in England, I quote from 'Drew's Meteorology,' page 138, that "the greatest difference in the reading of the dry and wet bulb thermometers, which the author registered during seven years of observation at Southampton, occurred April 19th, 1854, at 3 p.m., when the dry bulb thermometer reading was 69°, and the wet bulb 53°; difference 16°."

On the 21st a very marked change took place in the weather. The minimum temperature was 43·8° Fahr., at 9 a.m. 66° Fahr. Early in the forenoon the sky, from having been clear, became lurid and hazy; the atmosphere was loaded with impalpable

dust; a hot dry wind set in from the westward; the barometer fell considerably; the sensations were unpleasantly affected; the presence of positive electricity was made apparent by the electrometer. We now experienced all the sensations so familiar to us in India during the prevalence of the hot winds in that country; and it is, perhaps, deserving of mention that, although no more than five weeks have elapsed since the ice broke up, a supply of this article at dinner was highly appreciated. The natives, however, did not delay the use of this agreeable addition to their drinks so long as we did. They had begun its use almost as soon as they had ceased to collect it, and native drinks thus cooled were to be obtained at many of the temporary restaurants that occur at different parts of the streets.

In regard to the phenomena by which a dust-storm was attended, its rise was generally sudden, and was indicated by a disturbance in the state of the electrometer. The direction of the wind immediately before the occurrence of these storms was usually the south-west, whence it came in gusts and eddies, raising in its course small clouds or revolving pillars of dust, as in India, until shortly afterwards the entire atmosphere became obscured, and the storm prevailed with greater or less intensity.

Notwithstanding, however, that the weather during April was frequently broken with storms of this description, it was, upon the whole, an agreeable month.

MAY, 1861.

The following is a summary of observations during this month:
The strength of the force—British, 3415; *Seikhs,* 289. *Total,* 3694.

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
1	49·	85·	36·	29·78	29·92	00·14	25	4	8	1	Wind south, hot and dry.
2	55·	93·	38·	29·58	29·75	·17	27	1	6	2	Dust-storm; wind south-west; electricity negative; hot wind. One diarrhœa and fever.
3	70·	87·	17·	29·50	29·64	·14	Not noted	4	7	—	A sudden rise in minimum range.
4	62·	89·	27·	29·62	29·75	·13	37	1	12	—	Wind variable; electricity variable.
5	60·	82·	22·	29·77	29·90	·13	35	1	8	—	Wind north-north-west; electricity negative.
6	59·	82·	23·	30·01	30·16	·15	56	2	5	—	Sensations agreeable.
7	55·	68·	13·	30·13	30·26	·13	82, rain	1	6	—	
8	53·5	74·	10·5	30·16	30·24	·08	55, rain	3	11	1	
9	49·	77·	28·	30·15	30·20	·05	Not noted	2	7	—	Wind south-east, pleasant.
10	55·	78·	23·	30·04	30·05	·01	81, rain	8	6	—	Wind east.
11	47·2	82·	34·8	29·96	30·00	·04	51	2	9	—	Invalids of the season left.
12	55·	83·	28·	29·85	29·93	·04	38, faint shower	4	12	—	Slight shower from north-west.
13	50·	82·	32·	29·90	30·21	·31	46	1	10	—	Dust-storm; wind north; electricity negative.
14	41·	86·	45·	29·98	30·09	·11	25	1	8	—	Plants blighted by storm of yesterday.
15	50·5	90·	39·5	29·77	29·88	·11	Dryness excessive	—	18	—	Hygrometer 88°—57·5°; wind south-west.
16	57·	94·	37·	29·79	29·85	·06	Dryness excessive	2	15	—	Hygrometer 92°—60°; wind west.

17	63·	81·	18·	29·70	29·81	·11	43	—	14	—	Wind south-east. One with diarrhœa and fever.
18	51·	72·	21·	29·76	29·93	·17	53, rain	8	5	—	Dust-storm; elect. negative, then positive and variable.
19	46·5	85·	38·5	29·67	29·87	·20	46	2	5	—	
20	56·	82·	26·	29·71	29·77	·06	29	2	20	—	Dust and haze; wind south-east.
21	61·2	79·	17·8	29·72	29·74	·02	58	5	15	—	Dust and threatening rain.
22	55·	64·	9·	29·61	29·70	·09	93, rain	10	8	—	
23	54·	75·	21·	29·72	29·79	·07	78, rain	4	7	—	
24	57·5	70·	22·5	29·75	29·79	·04	73	4	6	—	Pleasant, cloudy day. One case of jaundice.
25	53·5	83·	29·5	29·87	29·87	·00	45	3	7	—	Sky clear; atmosphere moist.
26	55·	84·	29·	29·79	29·89	·10	48	4	9	1	Evening pleasant.
27	59·	87·	28·	29·77	29·85	.08	75, rain	2	7	—	
28	61·	76·	15·	29·78	29·93	·15	43	3	16	1	Horizon hazy; evening pleasant.
29	52·5	85·	32·5	29·76	29·94	·18	28	2	9	—	In sun heat unpleasant. One with icterus.
30	60·5	84·	23·5	29·80	29·88	·08	37	2	8	—	Hazy.
31	56·	84·	28·	29·86	29·99	·13	38	—	12	—	Sky clear. Sensations dry.

The heat during the month increased to an unpleasant degree. The actual increase of temperature, as compared with April, was only 7°, the maximum attained having been 94°. Great perturbations in the condition of the atmosphere took place. Dust-storms were frequent, although not doing more than densely obscuring the atmosphere—they not being revolving in nature, as in India. The entire fall of rain only amounted to 2·585 inches. Trees during the month came into full leaf. A slight increase in fevers took place as compared with April. The rarity of chest affections was remarkable, only 6 cases having been admitted during the month. Rheumatism, however, took the place that pulmonic diseases had held in April: thus, while in it there were admitted 22 cases of lung disease, and 6 cases of rheumatism, there were admitted in May, 6 cases of lung disease, and 21 of rheumatic affections. Liver affections were inconsiderable in number, there having been admitted only 2 of acute hepatitis, and 2 of jaundice.

From the subjoined abstract we learn that the —

	To 9 A.M.	To 3 P.M.	To 9 P.M.
Mean maximum temperature was .	69·0	81·7	75·9
Mean minimum „ .	55·7	62·8	61·7
Actual mean „ .	62·3	72·2	68·8

The highest degree attained during the month was .	94·0
The lowest reached was	41·0
The mean monthly temperature was	67·7
The greatest range during the month	53·0
The highest daily range, viz., on the 15th, was . .	39·5
The smallest daily range, viz., on the 22nd, was . .	9·0
The mean daily range of the thermometer was . .	26·2
The average amount of vapour in the atmosphere on twenty-eight days was	48·0
On one day the state of the hygrometer was not noted.	
On two days the degree of dryness was beyond what is derivable from Glaisher's tables. The average state of the hygrometer for these is, dry bulb 90°, wet 58·7°.	
On twenty-eight days, during which the presence of ozone in the atmosphere was perceptible, the average amount was	3·0
On three days there was no ozone perceptible.	
The general character of the weather during the month has been variable, but generally balmy, and with a pleasant, moist atmosphere.	
Rain fell on eight days; the total amount, according to gauge, being, inches	2·585
The prevailing winds south-east.	
The directions from which the winds prevailed were northerly on 4 days, southerly on 13 days, westerly on 1 day; on 12 days its direction was not noted. On 1 day the air was calm; no easterly wind is recorded.	
The monthly rate of mortality among British would amount for the year to, per cent.	2·04

The rate of admissions on account of climatorial diseases among British was as follows (including all hospitals) :

Fevers, per cent. of strength . . .	1·52
Pulmonic diseases	0·20
Diseases of stomach and bowels . . .	0·96
Rheumatic diseases	0·43
Liver diseases	0·17

The month of May set in with a minimum temperature of 49° Fahr.; at 9 a.m. it had reached 66° Fahr., and during the day attained a height of 85° Fahr.; a dry, hot wind prevailed from the south, although the intensity of its heat was much under that of the corresponding wind which prevails in India during the same period of the year. This wind having continued three days, a favorable change took place at the expiration of that time; the sensations, as well as the hygrometer indicating the presence in the atmosphere of an increased amount of vapour, which, in the course of a short time after the occurrence of a storm of thunder and lightning, fell as a slight shower of rain.

From the 5th to the 12th a slight fall of rain took place almost daily, although the amount was too trivial to be measured by the pluviometer. The weather during this time was agreeable, giving to the sensations the impression conveyed by what is called "a balmy" day in England. On the 13th the minimum temperature noted was 50·5° Fahr., and at 9 a.m. it had risen to 74° Fahr. The sky had in the early period of the day been clear; towards afternoon the breeze increased from the northward, quantities of dust were drifted about, the electrometer was violently agitated, a chain of sparks was disengaged between the extremities of the conductors when brought near to each other. Nor was this storm without its effects upon the sick in hospital, for according to Dr. Lamprey, some hæmorrhage took place from a wound in one case, tetanus occurred in another, and erysipelas in a third.

The pernicious effect exerted by this storm upon vegetation is mentioned in the chapter upon fields and agriculture.

On the 16th the wind was remarkably hot, and the dryness of the atmosphere extreme; thus, the dry bulb thermometer indicated 92·5°, the wet bulb 60° Fahr., the difference between them thus amounting to 32·5° Fahr.

The temperature remained high until the 22nd, when it fell to 62° at 9 a.m.; a heavy shower of rain occurred, and the wind being at the time strong, the sensations indicated an unpleasant amount of cold. A slight increase in temperature afterwards took place, but during the remainder of the month the weather remained agreeable.

JUNE, 1861.

The following is a summary of the observations taken during this month:
The strength of our force was—British, 3416; *Seikhs,* 289. *Total,* 3705.

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
1	53·	88·	35·	29·65	29·87	·22	29, slight rain	1	8	—	Slight rain at night.
2	61·	82·	21·	29·76	29·92	·16	30	3	5	—	
3	55·5	90·	34·5	29·76	29·91	·15	Dryness very great	2	15	—	Hygrometer, dry 85°, wet 58·5°.
4	64·	92·	28·	29·70	29·79	·09	30	—	11	—	
5	64·	90·	26·	29·91	29·95	·04	51	1	22	—	One case of fever and dysentery admitted: died.
6	58·5	95·	36·5	29·75	29·94	·19	55	1	9	—	
7	68·5	98·	29·5	29·55	29·61	·06	35	1	11	—	
8	69·	88·	19·	29·68	29·76	·08	66	3	15	—	One case of icterus.
9	62·5	98·	35·5	29·52	29·68	·16	30	—	11	—	Hot wind from west and south-west.
10	65·	86·	21·	29·75	28·88	·13	55	4	21	—	
11	62·	102·	40·	29·78	29·86	·08	30	2	19	—	
12	64·	106·	42·	29·73	29·79	·06	Dryness very great	—	8	1	Hygrometer, dry 95°, wet 69°.
13	69·5	100·	30·5	29·77	29·83	·06	32	—	16	2	One case of icterus.
14	69·	97·	28·	29·67	29·75	·08	Not noted	1	20	—	
15	72·8	104·	31·2	29·61	29·70	·09	30	1	19	—	
16	77·5	107·	29·5	29·62	29·72	·10	Ther. above scale in Glaisher's Tables	—	13	—	Hygrometer, dry 105°, wet 76°. Hot wind from west and south-west.

JUNE—*continued.*

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
17	79·	103·	24·	29·65	29·75	·10	43	—	12	1	
18	66·	85·	19·	29·86	29·93	·07	52, slight rain	3	23	1	Dust-storm; wind south-east; electricity variable; slight rain.
19	61·	76·	15·	29·91	29·94	·03	51, smart fall of rain	5	21	—	Smart fall of rain.
20	61·	87·	26·	29·83	29·89	·06	48	1	14	1	
21	64·	89·	25·	29·78	29·85	·07	40	1	16	—	
22	64·5	94·	29·5	29·78	29·82	·04	55	2	9	—	
23	69·5	86·	16·5	29·81	29·85	·04	79, slight rain	3	23	—	Smart fall of rain. One case of icterus.
24	66·	87·	21·	29·82	29·85	·03	83, slight rain	1	17	—	Slight rain. One case of icterus.
25	62·	90·	28·	29·71	29·78	·07	55	2	9	—	
26	66·	97·	31·	29·74	29·77	·03	Dryness great	1	11	—	Hygrometer, dry 96°, wet 71·5°.
27	73·	95·	22·	29·77	29·89	·12	41	2	17	1	
28	67·	90·	23·	29·74	29·83	·09	39, slight rain	1	20	—	Slight fall of rain.
29	68·	97·	29·	29·79	29·80	·01	Not noted	3	10	—	Dust in atmosphere; wind north-north-west. Lightning struck a house.
30	64·	94·	30·	29·70	29·78	·08	40	4	17	—	

The actual increase of temperature in June above May was 13° Fahr., the thermometer having indicated 107° on the 16th. Rain fell on only six days in June, instead of eight in the previous month, but the rainfall was trifling in amount, the total being only 1·795 inches. Fevers nearly trebled in proportion since May, but were not so ardent as might have been expected, considering the heat, nor were they attended by insolation. Chest affections were as rare as in May; bowel diseases increased almost in precisely a similar ratio to the fever; rheumatism decreased, but hepatic affections increased, although almost all the cases under the latter head were those of icterus.

From this abstract we learn that the—

	To 9 A.M.	To 3 P.M.	To 9 P.M.
Mean maximum temperature was	79·3	90·9	87·7
Mean minimum „	66·7	74·1	72·5
Actual mean „	73·0	82·5	80·1

The highest degree attained during the month was	107·0
The lowest reached was	53·0
The mean monthly temperature was	78·5
The greatest range during the month was	54·0
The highest daily range, viz., on the 12th, was	42·0
The smallest daily range, viz., on the 19th, was	15·0
The mean daily range of the thermometer was	27·5
The average amount of vapour in the atmosphere on twenty-four days was	45·0

On two days the state of the hygrometer was not noted.

On three days the amount of dryness was greater than what Glaisher's tables afford the means of calculating. The average for these was, for the dry bulb 92°, for the wet 66·3°.

On one day the state of the hygrometer was above the temperature noted in Glaisher's tables, viz., dry 105°, wet 76° Fahr.

On twenty-four days, during which the presence of ozone in the atmosphere was perceptible, the average amount was	2·0

On six days there was no ozone perceptible.

The general character of the weather during the month was hot and dry, with occasional hot winds.

Rain fell on six days, the total amount being, according to gauge, inch	1·795

The prevailing winds were southerly.

The wind was northerly on 3 days, southerly on 12, westerly on 12. On 3 days the atmosphere was calm. On no occasion did the breeze come from the east.

The monthly rate of mortality among British would amount for the year to per cent.	2·77

The rate of admissions on account of climatorial diseases among British was as follows (including all hospitals) :

Fevers, per cent. of strength . . .	3·36
Pulmonic diseases	0·24
Diseases of stomach and bowels . . .	2·98
Rheumatic diseases	0·35
Liver diseases	0·24

The month of June set in disagreeably; on the 1st the minimum temperature was 53·5° Fahr., at 9 a.m. 71·8° Fahr. During that day a dry, hot wind sprang up from south-west. This was temporarily interrupted by a slight shower on the night of the 1st; but it was evident from the rapid increase that was taking place in the state of the thermometer, that the hot season had now set in with severity. On the 6th, from a minimum of 59° Fahr. during the night, the thermometer in the shade during the afternoon reached 95° Fahr., and on the succeeding day it had reached 98° Fahr. The natives now began to inform foreigners who questioned them upon the subject, that great as the heat now was, it would soon be exceeded. They were correct when, early in the cold season, they intimated to us the nature of the weather that was before us; we therefore could not refuse to give to their predictions now a certain amount of confidence; nor was that confidence undeserved, as we subsequently had good reason to become aware.

Between the 9th and 16th of the month hot winds were very prevalent; indeed, the average temperature of the period, including the 11th to the 17th of the month, was 102° Fahr.

On the 14th the lowest noted was 69°; at 9 a.m. the temperature was 83° Fahr. The sky clear—a hot breeze from the south prevailed; hot as the weather was, however, it was up to the present time much less so, both absolutely and as regards the impressions made upon the sensations, than in India at the corresponding period. The 16th was still hotter. The thermometer, during the afternoon, attained 106° Fahr.; and at six o'clock, p.m., stood at 100°. A very convenient contrivance for cooling the room was now adopted by most of us. A large mass of ice was placed upon some cross pieces of wood placed over a bath tub in the centre of our sitting-room. By sitting close to this during the day, we were able to enjoy a tolerably pleasant temperature; and in the water that percolated from it

during the day and succeeding night we were able to enjoy the luxury of a cold bath on the following morning.

The natives had now adopted a style of dress suited to the climate. Furs and padded dresses had long previous been discarded; the style of costume had become thinner and thinner, and now their dress was generally nothing more than a pair of thin drawers. Some wore a gauze kind of jacket, but others were completely undressed to the waist; the women, however, were always modestly and becomingly dressed, the upper part of their person being always covered in a manner from which some ladies of European nations might, with advantage to themselves, take an example.

A heavy shower of rain having taken place, it was remarked that the atmosphere attained a degree of transparency greater than it had hitherto done; a range of hills that had up till the present time been hidden, became distinctly visible, being thrown into bold relief against the horizon as the sun descended behind them. The map of China informed us, that the range was that near Ting Ching. These were upwards of eighty miles from Tein-tsin; and we learned that a great part of the game that was to be met with in the market during winter, as also the very inferior description of coal that was then used, were originally brought down from this range.

For a time, the atmosphere became unpleasantly moist to the sensations, although the hygrometer did not indicate any great degree of humidity. The floors of our houses consisted in most instances of no better material than bricks, laid down more or less loosely; the apartments occupied by us not only were rendered extremely damp, but the emanations from the earth below, rising freely through this imperfect floor, became not only offensive, but pernicious to health. A damp heavy odour pervaded the houses, and the saline efflorescence from the soil became deposited in acicular crystals, like so much hoar frost.

Thus the weather continued till the end of the month; the only circumstance to be noted being that, on the 29th, at 6·30 p.m., a dust storm suddenly came on from north-north-west. Thunder and lightning succeeded; the latter, on one occasion, entering a barrack-room, and striking a handle of a sword, which was instantly fused. A heavy fall of rain soon afterwards followed.

JULY, 1861.

A summary of the observations taken is as follows:

The strength of the force—British, 3565; *Seikhs,* 288. *Total,* 3853.

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Insolation treated.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.						
1	67·	95·	28·	29·70	29·77	00·07	Not noted	1	17	—	—	
2	72·	102·	30·	29·60	29·67	·07	Ther. above scale in Glaisher's Tables	1	17	—	—	Dry bulb 101°, wet 78°.
3	72·	99·	27·	29·73	29·77	·04	44	3	22	2	—	
4	69·	87·	18·	29·73	29·79	·06	60	2	19	—	—	
5	71·	92·	21·	29·68	29·74	·06	65	1	14	—	—	
6	72·	97·	25·	29 61	29·67	·06	57		11	—	—	
7	81·	105·	24·	29·50	29·59	·09	Ther. above scale in Glaisher's Tables	3	13	1	—	Dry bulb 102°, wet 80·5. One with rheumatism and hepatitis: died.
8	76·	91·	15·	29·67	29·76	·09	64	2	23	—	—	Slight rain.
9	73·	88·	15·	29·80	29·83	·03	71	1	23	2	—	
10	68·5	95·	26·5	29·68	29·72	·04	73	4	19	—	—	
11	74·	95·	21·	29·76	29·76	·00	Not noted	1	13	—	—	
12	72·5	98·	25·5	29·69	29·76	·07	37		31	—	—	
13	75·	97·	22·	29·63	29·70	·07	47	1	15	1	—	One with fever and diarrhœa.
14	74·	100·	26·	29·66	29·70	·04	42	1	21	1	—	One with fever and diarrhœa.
15	76·	98·	22·	29·74	29·74	·00	Not noted	1	22	—	—	

16	75·	105·	30·	29·50	29·59	·09	51	3	23	2	—	A dust-storm.
17	73·5	95·	21·5	29·65	29·65	·00	59	2	21	—	—	
18	77·	104·	27·	29·73	29·80	·07	Ther. above scale in Glaisher's Tables	—	23	2	1	Dry bulb 101°, wet 80°.
19	80·	105·	25·	29·78	29·84	·06	ditto	1	27	3	3	Dry bulb 101°, wet 83°.
20	82·	108·	16·	29·80	29·87	·07	ditto	—	30	3	9	Dry bulb 101°, wet 78°. Two with icterus.
21	83·	107·	24·	29·79	29·89	·10	ditto	1	41	3	14	Dry bulb 102°, wet 80.°
22	82·	108·	26·	29·77	29·79	·02	ditto	—	43	5	14	Dry bulb 102·5°, wet 78°.
23	81·5	105·	23·5	29·55	29·73	·18	ditto	1	31	4	19	Dry bulb 102·5°, wet 78·5°. One with icterus.
24	81·5	96·	14·5	29·50	29·55	·05	43	1	39	2	28	
25	74·	94·	20·	29·65	29·72	·07	59	2	29	—	28	One with icterus.
26	72·	92·	20·	29·72	29·75	·03	52	1	8	—	25	
27	68·	80·	12·	29·76	29·79	·03	94	2	23	—	22	Heavy rainfall took place.
28	61·	80·	19·	29·81	29·87	·06	59	2	11	1	17	One with fever and dysentery; one with fever and diarrhœa.
29	65·	88·	23·	29·82	29·86	·04	43	—	11	—	17	One with icterus.
30	67·	94·	27·	29·74	29·81	·07	42	1	20	1	15	
31	69·	95·	26·	29·73	29·77	·04	49	—	18	2	14	

July has been the hottest month during the season; the mean for the month, 86° Fahr. The period from the 17th to 24th depressing the physical energies, and producing an alarming amount of illness among the troops. On the 1st of the month a brilliant comet appeared between Camel Leopardus and Ursa Major. Clouds began to collect early in the month, but the sky for a great part was clear, and sun very hot. A number of cases of insolation were admitted; some others admitted with fever soon ran into the disease, and sick in the wards were seized with that peculiar affection. Hepatitis was not frequent in a simple form, but often attended dysentery, and in others was only apparent in the occurrence of jaundice.

The following abstract shows that the—

	To 9 A.M.	To 3 P.M.	To 9 P.M.
Mean maximum temperature was .	87·6	97·5	93·5
Mean minimum „ .	73·8	83·4	79·1
Actual mean „ .	80·7	90·4	86·3
The highest degree attained during the month was .			108·0
The lowest reached was			61·0
The mean monthly temperature was			85·8
The greatest range during the month			47·0
The highest daily range, viz., on the 2nd and 16th, was			30·0
The smallest daily range, viz., on the 26th, was . .			12·0
Mean daily range of the thermometer during the month			22·9
The average amount of vapour in the atmosphere on twenty days was			55·0
On three days the state of the hygrometer was not noted.			
On eight days the state of the hygrometer was above the temperature noted in Glaisher's tables. The average reading of the dry bulb on these was 101·6°, of the wet 81·2°; the difference being thus 20·3. The greatest difference was on the 22nd, when the dry was 102·5°, wet 78°, difference 24·5°. The least on 23rd, when the dry was 102·5°, wet 92·5°, difference 10°.			
On twenty-four days on which the presence of ozone in the atmosphere was perceptible, its average amount was			1·6
On seven days there was no ozone perceptible.			
The general character of the weather was excessively hot and exhausting.			
Rain fell on seven days, the total amount of rain, according to gauge, being, inch			1·035
The prevailing winds were southerly.			
The wind was northerly on 6 days, southerly on 13, easterly on 3, westerly on 7, and on 2 there were calms.			
The monthly rate of mortality among British would amount for the year to, per cent.			12·36

The rate of admissions on account of climatorial diseases among British was as follows (including all hospitals) :

Fevers, per cent. of strength	5·73
Pulmonic diseases	0·35
Diseases of stomach and bowels . . .	7·22
Rheumatic diseases	0·38
Liver diseases	0·41
Heat apoplexy	1·57

July proved to be not only the hottest month, but the most fatal to our troops of any through which we had already passed or that were still before us. On the 1st, the minimum of the thermometer was 81° Fahr., the degree of saturation of the atmosphere 57°. The sky was clear, the sensations during the day indicative of great heat. In the evening an agreeable breeze set in from south-east; and it may be remarked, although not directly bearing upon the subject of climate, that on the evening of this day, a comet was first observed. It continued from this time nightly to make its appearance, receding further and further with extreme velocity, until finally lost to sight in the distance after August 10th, on which date I was last able to obtain a faint glimpse of it.

During the first week of this month, the heat was very great; on the 7th, the minimum at night was 80°, at 9 a.m. 91° Fahr. Next day a slight fall of rain took place, and there was a short respite in the severity of the weather. It was only, however, as a temporary lull before the final outburst of the sun in all his power.

For the most part, the atmosphere conveyed an impression of dampness to the sensation, and this circumstance tended to render it extremely trying to the health of the troops. From the 13th the few clouds that till then had dotted the sky, became gradually fewer in number. On the 16th with the wind from north, a dust-storm suddenly arose, attended as usual with perturbations in the electrometer. In a few minutes it was succeeded by a shower of rain. The occurrence of this dust-storm deserves to be noted here, as it was the only instance of one happening during this month. Our most severe period, and also our most fatal one was from the 17th to 23rd. The

heat was then so severe that the mean temperature for the period was 96° Fahr. A clear, cloudless sky, permitted the rays of the sun to pour down in their full intensity. On three occasions the mercury in the thermometer reached 108° Fahr.; the atmosphere at 9 a.m. gave for these days an average of 50°. During the latter dates, the sensations indicated that a favorable change in the climate was about to set in. On the 24th, the maximum range of the thermometer had descended to 96°; and from this time forward the general progress of the line of temperature was downwards, although occasional fluctuations took place, as described when noting the conditions of climate during other periods of the year.

On the last day of July, the thermometer is recorded as having descended to a minimum of 70° Fahr., and at 9 a.m. to have stood at 81° Fahr.; white, filmy clouds being at the time scattered at intervals over the firmament.

AUGUST, 1861.

A summary of observations during this month is given below:

Strength of the force—British, 3388 : *Seikhs,* 288. *Total,* 3676.

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere. 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Insolation treated.	Remarks upon the state of the weather and phenomena of disease
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.						
1	71·	83·	12·	29·70	29·75	00·05	75	2	15	2	12	0·02 inch rain; thunder.
2	68·	89·	21·	29·52	29·59	·07	85	1	22	—	12	
3	70·	96·	26·	29·61	29·63	·02	Great	—	21	1	11	Dry bulb 95°, wet 70°; a fog occurred in evening.
4	72·	85·	13·	29·62	29·70	·08	68	2	29	—	8	0·07 inch rain.
5	69·	94·	25·	29·68	29·79	·11	Great	1	17	4	8	Dry bulb 92·5°, wet 68°.
6	67·	96·	29·	29·78	29·83	·05	Great	1	31	1	8	Dry bulb 96°, wet 70°.
7	72·	97·	25·	29·73	29·79	·06	37	1	21	—	6	Positive electricity noted in evening.
8	73·	100·	27·	29·75	29·77	·02	35	2	18	1	6	0·06 inch rain.
9	77·	98·	21·	29·75	29·81	·06	50	—	15	1	5	One with diarrhœa and fever; one with fever and hepatitis.
10	71·	100·	29·	29·73	29·78	·05	85	3	20	—	5	0·92 inch rain. One with fever and insolation; one with dysentery and insolation. Rain-storm at 5 p.m.
11	69·	90·	21·	29·75	29·80	·05	58	2	18	2	5	One with fever and insolation.
12	69·	91·	22·	29·74	29·76	·02	52	2	11	1	6	One with fever and insolation; two with fever and diarrhœa.
13	71·	96·	25·	29·77	29·82	·05	37	1	22	1	7	Two with fever and dysentery; one with insolation.

AUGUST—*continued.*

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Insolation treated.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.						
14	74·	96·	22·	29·83	29·86	00·03	33	1	15	1	8	
15	73·	93·	20·	29·91	29·95	·04	53	2	19	2	8	0·80 inch rain. One with diarrhœa and fever.
16	65·	80·	15·	29·86	29·93	·07	100	3	25	—	8	1·32 inch rain.
17	63·5	76·	12·5	29·67	29·72	·05	89	3	7	—	7	0·90 inch rain.
18	65·	88·	23·	29·65	29·71	·06	52	—	15	1	7	
19	67·	91·	24·	29·68	29·72	·04	43	1	9	—	7	One with diarrhœa and icterus.
20	69·	93·	24·	29·71	29·76	·05	44	—	11	1	7	
21	73·	93·	20·	29·74	29·80	·06	41	—	10	—	7	
22	72·	83·	11·	29·82	29·87	·05	75	1	12	—	7	0·02 inch rain. One with fever and insolation.
23	60·5	86·	25·5	29·72	29·77	·05	100	4	19	—	7	1·66 inch rain.
24	64·	86·	22·	29·80	29·84	·04	68	—	9	—	7	
25	71·5	93·	21·5	29·82	29·85	·03	56	—	21	—	5	
26	73·	93·	20·	29·77	29·83	·06	52	1	12	—	5	
27	73·	92·	19·	29·78	29·85	·07	64	—	10	—	5	
28	74·	94·	20·	29·82	29·86	·04	76	2	21	—	5	0·24 inch rain. One with insolation.
29	74·	87·	13·	29·90	29·93	·03	41	—	22	—	6	0·69 inch rain.
30	65·	77·	12·	29·98	30·03	·05	69	4	19	—	6	0·05 inch rain.
31	65·	83·	18·	30·00	30·05	·05	56	1	7	—	4	

A considerable decline took place in the temperature of August, as compared to July. Rain fell on twelve days during the month, and it was remarked that the quantity of ozone perceptible was greatest on these occasions. Total amount of rain 6·75 inches. Fevers and bowel complaints continued numerous, the former probably induced by exposure to heat of sun; the latter to emanations from decomposing animal matter rendered more readily decomposed by moisture with heat. The cases of liver diseases were almost all those of icterus; hepatic disorganization, however, frequently attended fatal cases of dysentery.

From the following abstract we learn that the—

	To 9 A.M.	To 3 P.M.	To 9 P.M.
Mean maximum temperature was .	8·34	90·0	87·2
Mean minimum „ .	70·0	77·5	75·4
Actual mean „ .	76·7	83·7	81·3

The highest degree attained during the month was .	0·100
The lowest degree reached was	60·5
The mean monthly temperature	80·5
The greatest range during the month . . .	39·5
The highest daily range, viz., on the 6th and 10th, was	29·0
The smallest daily range, viz., on the 22nd, was . .	22·0
The mean daily range of the thermometer during the month	20·5
The average amount of vapour in the atmosphere on twenty-eight days was	60·0
On three days the difference between the dry and wet bulb was greater than what are calculated for in Glaisher's tables. For these three days the average reading would be, for the dry bulb 91·1°, and for the wet 69°; thus indicating	30·0
On twenty-two days, during which the presence of ozone was perceptible, its average amount was .	2·0
On nine days no ozone was perceptible.	
The general character of the weather was much milder than July had been. The presence of more moisture in the atmosphere, the occurrence of clouds and rain, were agreeable to the sensations.	
Rain fell on twelve days, the total amount being, according to the gauge, inches	6·75
The prevailing winds were northerly.	
The wind was northerly on 14 days, southerly on 5, easterly on 2, westerly on 10. On no day during the month was the air calm.	
The monthly rate of mortality among British would amount for the year to, per cent.	6·48

The rate of admissions on account of climatorial diseases among British, was as follows (including all hospitals):

Fevers, per cent. of strength	3·71
Pulmonic diseases	0·40
Diseases of stomach and bowels . . .	5·42
Rheumatic diseases	0·27
Liver diseases	0·65

Only three cases of heat apoplexy occurred.

The month of August set in agreeably; the minimum temperature was 62°, at 9 a.m. 77° Fahr.; the amount of vapour in the atmosphere 70°. The wind was from north by west, sky cloudy and threatening; during the evening a fall of rain took place, but much less heavy than might have been anticipated from the indications that preceded it.

On the 3rd a fog occurred at 6 p.m., and continued till about ten o'clock the same evening. On the 4th the minimum was 73°; the thermometer at 9 a.m. 76° Fahr. Sky overcast; the wind north; a storm of thunder and lightning set in during the afternoon, and was very speedily succeeded by rain. The temperature was now rendered so temperate that on the following day the brigade was able to parade for exercise—a matter that would have been impracticable had we been in India.

From this time to the middle of the month, the temperature was pleasant; the sky for the most part cloudy, occasional trivial falls of rain taking place, and the minimum temperature going down to 68° and 69° Fahr.; that at 9 a.m., ranging from 79° to 84° Fahr.

Judging from what had taken place after the middle of February, which may, as regards the position of the sun, be looked upon as the opposite of August, we naturally looked for a rapid descent of temperature subsequent to the 14th of the latter month. On that day the minimum temperature was 74°; but by the 17th, it had descended to 65°.; and at 9 a.m. was only 69°. Heavy rain was falling at the time, the wind blew gently from the north, and the sensations were most agreeable so long as we did not expose ourselves directly to the weather. We had indeed good reason to congratulate ourselves upon the favorable change that had taken place in the season. Weather of the same character as that just described prevailed to the 23rd of the month on which date I had to leave the station. I

was accordingly unable to note the various changes that took place during the remainder of the month, but may observe that the meteorological register that was kept up most carefully, indicated a gradual decrease of temperature, the occurrence of cloudy weather, and some very severe falls of rain towards the end of the month.

From the report by Dr. Lamprey I learn that rain occurred at frequent intervals during this month, the total fall amounting to 6·75 inches. The degree of moisture in the atmosphere was now enough to moderate its temperature as compared with the preceding month, as also to saturate the ground, which continued in a damp condition throughout the greatest part of it.

The only occasion during this month upon which the presence of electricity was noted occurred on the 7th, when the wind came on in gusts from north-north-east, with occasionally a flash of lightning and a slight fall of rain. On these occasions, the gold leaf of the electrometer is said to have vibrated to it. On the 28th, the wind was from the south-west—that is, the "hot wind quarter;" yet the sensation of heat was not on this occasion great, the thermometer at the time indicated 94°, there being only a difference of 5·3° Fahr. between the readings of the dry and wet bulbs; hence, of course, the absence of a "hot" wind. No dust-storm occurred during this month.

SEPTEMBER, 1861.

Summary of observations taken during the month:

Strength of the force—British, 3368; *Seikhs,* 318. *Total,* 3686.

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
1	69·	86·	17·	30·00	30·24	00·24	71	—	18	1	
2	69·	87·	18·	29·90	30·00	·10	58	1	9	1	
3	66·	92·	26·	29·74	29·84	·10	55	—	27	—	One with dysentery and fever.
4	64·	84·	20·	29·78	29·83	·05	75	1	13	2	
5	68·	86·	18·	29·87	29·94	·07	Not noted	—	17	—	
6	65·	77·	12·	30·00	30·10	·10	60	2	21	—	
7	57·	74·	17·	29·96	30·06	·10	37	—	13	1	
8	51·	78·	27·	29·88	29·94	06	34	2	8	—	
9	54·	81·	27·	30·03	30·08	·05	64	1	13	—	One with fever and diarrhœa.
10	56·	80·	24·	30·00	30·08	·08	58	1	14	2	One with fever and insolation.
11	57·	81·	23·	30·03	30·10	·07	62	—	10	1	
12	55·5	78·	22·5	30·14	30·17	·04	49	2	13	1	
13	57·	81·	24·	30·12	30·20	·08	55	2	17	—	

14	57·	81·	24·	30·03	30·15	·12	48	—	9	—
15	61·	74·	13·	29·85	29·92	·07	65	2	9	—
16	57·	79·	22·	29·92	30·04	·12	46	1	7	—
17	60·	79·	19·	30·09	30·15	·06	43	—	11	—
18	57·	80·	23·	30·14	30·15	·01	44	2	9	—
19	58·	83·	25·	30·14	30·18	·04	50	—	14	1
20	58·	83·	25·5	30·08	30·22	·14	50	—	9	2
21	56·5	79·	22·5	30·20	30·26	·06	40	—	16	2
22	59·	79·	20·	30·14	30·17	·03	47	1	7	2
23	51·	71·	20·	30·17	30·24	·07	81	2	10	1
24	47·	62·	15·	30·12	30·16	·04	53	3	12	1
25	40·	67·	27·	30·19	30·24	·05	37	—	13	2
26	43·5	71·	27·5	30·22	30·31	·09	41	2	8	—
27	50·	73·	23·	30·18	30·26	·08	50	2	22	—
28	52·	67·	15·	29·96	30·06	·10	67	2	6	—
29	50·5	75·	25·5	29·88	29·96	·08	64	2	7	—
30	51·	79·	28·	92·73	29·84	·11	73	1	2	—

The temperature during September was agreeable. The atmosphere for the most part contained sufficient moisture to render it pleasant to the sensations. Sickness decreased as regards numbers, but the mortality was still high, apparently from attacks of illness brought on during the great heat. Liver disease was a frequent attendant upon diseases of the stomach and bowels.

An analysis of the observations taken gives the following conclusions:

	To 9 A.M.	To 3 P.M.	To 9 P.M.
Mean maximum temperature was	70·6	75·2	74·6
Mean minimum ,,	57·1	62·7	63·2
Actual mean ,,	63·8	68·9	68·9

The highest degree attained during the month was . 92·0
The lowest degree reached was . . . . . 40·0
The mean monthly temperature was . . . . 67·2
The greatest range during the month was . . . 52·0
The greatest daily range, viz., on the 30th, was . . 28·0
The smallest daily range, viz., on the 6th, was . . 12·0
The mean daily range of the thermometer during the month was . . . . . 21·6
The average amount of vapour in the atmosphere on twenty-nine days was . . . . . 54·0
On one day the state of the hygrometer was not noted.
On nineteen days, during which the presence of ozone was perceptible, its average amount was . . . 1·0
On eleven days no ozone was perceptible.
The general character of the weather was agreeable, the rays of the sun were hot, but in the shade the temperature was pleasant; the sky was partially obscured by clouds.
Rain fell on eight days, the total amount being, according to the gauge, inches . . . . . 2·52
The prevailing winds were northerly.
The winds were northerly on 14 days, southerly on 8, easterly on 4, westerly on 3, and on 1 the air was calm.
The monthly rate of mortality among British would amount for the year to, per cent. . . . . 6·48

The rate of admissions on account of climatorial diseases, among the British (including all hospitals) was as follows:

Fevers, per cent. of strength	1·74
Pulmonic diseases	0·32
Disease of stomach and bowels	3·31
Rheumatic diseases	0·40
Liver diseases	0·27

No cases of insolation occurred.

A considerable fall in temperature was noticed in the early part of the month, particularly at night, when blankets had to be taken into use. By the fourth the thermometer had reached a minimum of 64° Fahr.; at 9 a.m. the temperature was 71° Fahr. The wind was northerly, the sky overcast. A large amount of water lay about in all directions, indicating how heavy had been the fall. The country in the neighbourhood had been converted for a great part into a swamp, and it was evident that this was the middle of the rainy season. We naturally judged that an especial degree of good fortune had attended the military operations of last year, in so far as weather was concerned. Had the season then been attended by the amount of rain that now had evidently fallen, it would not have been possible to have prosecuted the advance towards the capital.

As the rise in the thermometer in the early part of the season had been remarkable, so was now its fall. By the 14th of this month the lowest range had gone down to 58° Fahr., while at 9 a.m. the mercury stood at 67° Fahr. The sky was cloudy, a faint breeze prevailed from the south, and the impressions made upon the sensations were agreeable.

On the 27th the minimum had descended to 51° Fahr.; the temperature at 9 a.m. was 60°, the sky hazy, the wind south by west, the climate exceedingly agreeable. Sickness, which had during the intensity of the hot weather prevailed to a great degree, still continued, although in somewhat diminished degree, the cases of severe illness that had been admitted in June, July, and August, still filling up the wards; the actual numbers admitted, however, were gradually diminishing.

On the last day of this month the minimum was found to have descended to 52°; at 9 a.m. the temperature was 62° Fahr.; the sky had become clear; a breeze prevailed from west by north, and it was evident that the cold weather was not far distant.

Subsequent to my arrival in England I have received from Dr. Lamprey the meteorological records for the months of October and November, which I am accordingly enabled to add hereto, and in doing so, to record my obligations to this medical officer for his polite attention.

OCTOBER, 1861.

Abstract of observations taken during the month:

Strength of the force—British, 1988.

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
1	53·	69·	16·	29·94	30·03	00·09	32	1	11	—	
2	44·	70·	26·	30·04	30·06	·02	32	1	16	—	
3	47·	77·	30·	30·03	30·05	·02	36	1	4	—	
4	55·	73·	18·	30·00	30·06	·06	65	1	10	1	
5	57·	71·	14·	29·86	29·97	·11	73	2	8	—	
6	44·5	69·	24·5	30·19	30·22	·03	37	1	6	—	
7	42·5	75·	29·5	30·01	30·15	·14	50	1	13	1	
8	52·	67·	15·	30·12	30·26	·14	43	2	8	—	
9	40·	71·	31·	30·12	30·22	·10	31	—	1	—	
10	41·	67·	26·	30·26	30·31	·05	58	—	4	2	
11	44·	67·	23·	30·24	30·35	·11	42	1	7	—	

12	43·	71·	28·	30·16	30·22	·06	41	2	3	—	
13	44·	75·	31·	30·13	30·15	·02	40	2	2	—	
14	44·	77·	33·	30·13	30·17	·04	36	2	7	—	
15	51·	76·	25·	30·13	30·19	·06	40	1	7	—	
16	54·	75·	21·	30·16	30·22	·06	57	1	2	—	
17	46·	74·	28·	30·22	30·28	·06	48	2	7	—	
18	47·	76·	29·	30·20	30·24	·04	33	2	—	—	
19	46·	73·	27·	30·15	30·21	·16	60	1	1	—	
20	47·5	65·	17·5	30·35	30·36	·01	47	1	7	—	
21	43·	65·	22·	30·20	30·28	·06	63	—	3	—	
22	37·	68·	31·	30·21	30·35	·14	47	1	11	—	
23	49·	70·	21·	30·10	30·19	·09	88	1	5	—	
24	39·	70·	31·	30·03	30·08	·05	56	—	7	—	
25	45·	74·	29·	30·08	30·14	·06	43	1	6	—	
26	46·	72·	26·	30·24	30·27	·03	56	—	3	—	
27	46·	57·	11·	30·15	30·27	·12	100	5	7	—	Slight rain.
28	43·	62·	19·	30·26	30·30	·04	66	—	5	—	
29	46·	60·	14·	30·27	30·35	·08	81	2	5	—	
30	38·	63·	25·	30·18	30·22	·04	100	1	5	—	
31	37·6	63·	25·4	30·16	30·22	·06	72	—	6	—	

From the observations taken we have the following particulars :

	To 9 A.M.	To 3 P.M.	To 9 P.M.
Mean maximum temperature was .	59·5	69.3	67·8
Mean minimum „ .	43·8	53·4	52·1
Actual mean „ .	51·6	61·3	59·9

The highest degree attained during the month was .	77·0
The lowest degree reached was	37·0
The mean monthly temperature was	57·5
The greatest range during the month . . .	40·0
The greatest daily range, viz., on the 14th, was . .	33·0
The lowest daily range, viz., on the 27th, was . .	11·0
The mean daily range of the thermometer was . .	24·1
The average amount of vapour in the atmosphere during the entire month was	54·0
During twenty-four days, on which the presence of ozone in the atmosphere was perceptible, the average amount was	1·5
On seven days its presence was not perceptible.	
The general character of the weather during the month was clear and bracing.	
Rain fell on only one day, the amount being, inch .	0·40
The wind was chiefly south-westerly.	
The directions from which it prevailed were northerly on 5 days, southerly on 10, easterly on 2, westerly on 11, on 3 the air was calm.	
The monthly rate of mortality among the British would amount for the year to, per cent.	2·41

The rate of admissions on account of climatorial diseases among British (including all hospitals) was as follows, viz.

Fever, per cent. of strength . . .	0·75
Pulmonic diseases	0·15
Diseases of the stomach and bowels . .	3·06
Rheumatic diseases	0·34
Liver diseases	0·55

Dr. Lamprey has kindly forwarded to me his report upon the

meteorology of Tein-Tsin, during this month, and from this report I extract the following particulars, viz. :

"The month of October was characterised by a tolerably equal temperature of a fine bracing character, not unlike, in many respects, the weather experienced in England during the same month. The average for the month was 10° Fahr. less than last month.

"During the month, the fur shops made a great display of their wares, and the Chinese began to wear their thick, padded garments. After the first of the month swallows were no longer seen; many migrating birds made their appearance on their way south—wild swan, geese, ducks and teal, were sold in the market. Insects were still abundant, but insect life gradually diminished towards the end of the month.

"The trees began to drop their leaves, and many of the less hardy species became completely bare. Harvest operations were actively carried on during the month, and in many places the soil was reploughed and sown with winter wheat; pears, apples, and grapes were stowed in an ingenious way in the empty ice-houses. The underground vaults were being got ready for the white cabbage and other vegetables. As yet there was no appearance of snow or ice. Rain fell on only one day, viz., the 27th; the fall then amounted to ·40 inch.

NOVEMBER, 1861.

Abstract of observations taken during the month:

Strength of the force—British, 1984.

Day of the month.	Thermometer.			Barometer.			Humidity of atmosphere, 100 = saturation, deduced from Glaisher's tables.	Ozone.	Admissions into hospital from all causes.	Deaths from all forms of disease.	Remarks upon the state of the weather and phenomena of disease.
	Minimum.	Maximum.	Daily range.	Minimum.	Maximum.	Daily range.					
1	43·	65·	22·	30·16	30·18	00·06	59	0	5	—	
2	36·	61·	21·	30·31	30·34	·04	Not noted	3	5	—	
3	33·	58·	25·	30·14	30·26	·12	49	0	4	1	
4	34·	60·	26·	30·06	30·17	·11	88	2	2	—	
5	40·	68·	28·	29·94	30·08	·14	37	1	5	—	
6	31·5	58·	26·5	30·08	30·23	·15	41	—	5	—	
7	30·	50·	20·	29·85	30·07	·12	46	—	7	—	
8	28·5	43·	14·5	30·09	30·16	·07	37	—	5	—	
9	25·	55·	30·	30·32	30·37	·05	74	—	7	—	
10	31·	56·	25·	30·21	30·28	·07	60	2	9	—	

11	44·	58·	14·	30·10	·02	93	2	6	—	Slight rain.
12	45·	58·	13·	30·12	·03	81	1	5	—	
13	36·	60·	24·	30·05	·07	75	2	7	—	Slight rain.
14	37·	58·	21·	30·12	·06	67	4	8	—	
15	35·	48·	13·	30·15	·14	62	1	7	—	
16	33·	49·	16·	30·22	·12	25	1	4	1	
17	34·	50·	16·	30·10	·15	73	1	5	—	
18	35·	54·	19·	30·17	·11	43	—	4	—	
19	34·	52·	18·	30·26	·11	55	—	5	—	
20	36·	51·	15·	30·27	·03	64	—	7	—	
21	36·	53·	17·	30·31	·08	69	—	10	—	
22	34·	47·	13·	30·32	·10	79	—	7	—	
23	37·	49·	12·	30·18	·07	62	—	5	—	Slight rain.
24	30·	41·	11·	30·42	·02	70	—	2	—	
25	29·	41·	12·	Observations here ceased.		70	Observations cease.	6	—	
26	28·	45·	17·			85		6	—	
27	29·	41·	12·			84		5	—	
28	29·	44·	15·			84		10	—	
29	29·	52·	23·			54		2	—	
30	27·	41·	14·			89		2	—	

The analysis of the observations gives the following results, viz. :

	To 9 A.M.	To 3 P.M.	To 9 P.M.
Mean maximum temperature was .	46·9	50·4	50·6
Mean minimum ,, .	34·6	37·5	38·4
Actual mean ,, .	40·7	43·9	44·5

The highest degree attained during the month was . 68·0
The lowest degree reached was . . . . . 25·0
The mean monthly temperature was . . . . 42·5
The greatest daily range, viz., on the 9th, was . . 30·0
The lowest daily range, viz., on the 24th, was . . 11·0
The mean daily range of the thermometer was . . 19·4
The average amount of vapour in the atmosphere during twenty-nine days was . . . . . 64·0
On one day it was not noted.
During eleven days on which the presence of ozone in the atmosphere was perceptible, the average amount was . . . . . 1·0
On thirteen days its presence was not perceptible.
On six days observations for it were not recorded.
The general character of the weather during the month was cold and windy.
Rain fell on three days, the total amount being, in inches . . . . . 1·46
The prevailing winds were northerly.
The directions from which the wind came were northerly on 11 days, southerly on 7, easterly on 1, westerly on 6, and on 5 the air was calm.
The monthly rate of mortality among the British would amount for the year to, per cent. . . . . 1·20

The rate of admissions on account of climatorial diseases among British (including all hospitals) was as follows, viz. :

Fevers, per cent. of strength . . .	0·55
Pulmonic diseases	1·31
Diseases of the stomach and bowels . .	2·06
Rheumatic diseases	0·35
Liver diseases	0·20

According to Dr. Lamprey's report, the temperature during this month gradually merged into the cold of winter. On the 8th ice half an inch thick was found on water exposed to the air during the night, but it was not until the 24th that ice and hoar frost first began to appear ascendant phenomena. No snow fell during the month.

Rain fell on the 11th, 13th, and 23rd; the total amount 1·46 inch; on the second of these dates, a thunderstorm with wind from the south.

On the 7th a strong gale from the west, came on with much dust, but the state of the atmosphere was not noted.

No grouse (sand) have as yet made their appearance; swan, and other water fowl were sold in the market; hares became abundant, the season for hawking having commenced. Vegetables preserved underground are abundant in the market. The natives have taken into general wear furs and sheep-skin coats.

In conclusion, I would offer the following brief observations. It may possibly be that even now the question may be put by some readers of the detailed account herein given of the meteorology of China, and especially of that part of the country where Tein-tsin is situated, of what use are all these minutiæ. What good purpose do they serve, either as regards sanitary considerations, or as regards military arrangements? To quote Sir Ranald Martin, "In a military point of view the knowledge of the pathogenic march of the seasons in different parts of the globe, and of the relation of the sanitary condition of armies with the different meteorological influences, is of immense interest, and has not yet received the attention it deserves." This is true in an especial manner in regard to China, where in all probability we have entered upon a policy which will necessitate the movement in different directions, during many years to come, of considerable bodies of troops; and it is evident that in regard to such movements, a knowledge of the climate is very necessary; while, in order that suitable arrangements may be made for probable sick, it is no less necessary that the connection of particular diseases with certain atmospheric conditions should be known.

In some parts of the world this connection of particular diseases with certain climates has been fully investigated; thus—In the 'Indian Annals of Medical Science,' No. 11, for January, 1859, we learn that M. Von A. Muhry, in his investigations of hill climates, divides them into zones, according to temperature, and the same might probably be done in flat countries, according to temperature of locality; thus—

1. Lower or hot region, with a mean temperature of 72·5° to 81·5°, presents as phenomena of disease, torpidity and adynamic, with tendency to derangement of digestive organs, especially liver and intestinal canal, also spinal marrow and skin.

2. Middle or temperate range. This is divided into a cooler and a warmer, viz., from 41° to 54·5°, and from 54 to 72·5°. Here the phenomena of disease fluctuate according to the season. Their character is in winter inflammatory, in summer it is more torpid; the organic tendency, too, is in winter rather to the respiratory, in summer to the digestive organs.

Sir Ranald Martin also remarks, in discussing the subject of climate, that the terms hot, warm, cold, cool, as applied to the surrounding air, are regulated by the sensations produced; and if the heat be carried off as fast as it is generated, but no faster, no particular sensation is felt, the bodily powers being neither stimulated nor exhausted. Supposing, then, that no extraordinary exertions are made, the equilibrium is maintained when the thermometer stands at 62° Fahr., or thereabouts, and this point in the scale is therefore called temperate. He then goes on to say that all degrees above this to 70° Fahr. are reckoned warm; all above 70°, hot. So also, from 60° to 50°, the temperature is cool; below that, cold.

In the course of the foregoing observations on climate, I have alluded to some of the popular divisions into periods of the cold and of the hot season. It may now not be uninteresting to give similar information in regard to the division of the whole year.

According to the Chinese almanacs, published at Pekin, in latitude 40° N., in their first moon, which corresponds nearly to our month of February, the ice is said to melt, the wild fowl to fly northward, and the foliage of plants and trees to be renewed. In the second, peach trees blossom, swallows return, and there is much thunder and lightning. In the sixth, the

weather grows hot, and the period of heavy rains comes on. In the 9th, wild fowl return to the south, the chrysanthemum flowers, trees turn yellow and shed their foliage. In the twelfth, lakes and rivers are covered with ice, and the ground is frozen (Sir John Davis, vol. iii, p. 77). The general correctness of this summary becomes very apparent after a perusal of the remarks and observations in connection with these subjects now given.

In reference to ozone, it may be observed that "Dr. Faraday considers it to be oxygen in an allotropic state, that is, with a capability of immediate and ready action impressed upon it. Its discoverer is disposed to view it as a bisoxide of hydrogen; as yet, the mode by which oxygen passes into ozone is inexplicable."

"Schonbein has proved by experiments, that air containing $\frac{1}{6000}$ of ozone can disinfect 540 times its volume of air produced from highly putrid meat; that is to say, such a fœtid atmosphere may be completely purified by a quantity of ozone equal to $\frac{1}{3,240,000}$ of its volume. Now, in bad localities it is evident that we may expect the test to show little or no ozone, while, as Faraday found at Brighton, the pure air from the ocean abounds with it." (Drew's 'Practical Meteorology.')

A careful record was kept from day to day of the amount, as indicated by prepared paper, of this recently discovered agent in the atmosphere; the object in view being to ascertain what probable connection it may have had with the occurrence of severe disease. The results are as follow, viz.:

Month.	Days on which ozone existed.	Amount of ozone.	Annual rate of mortality per ct.
December . . .	19	2	5·16
January . . .	26	2	7·80
February . . .	26	5	2·40
March . . .	28	3	3·12
April	18	3	5·64
May	28	3	2·04
June	24	2	2·77
July	24	1	12·36
August . . .	22	2	6·48
September . . .	19	1	6·48
October . . .	24	1·5	2·41
November . . .	19	1	1·20

It is evident that these particulars, if they prove anything at all—and it is not clear to me that they do—prove the very opposite of what, according to theory, would be expected from them.

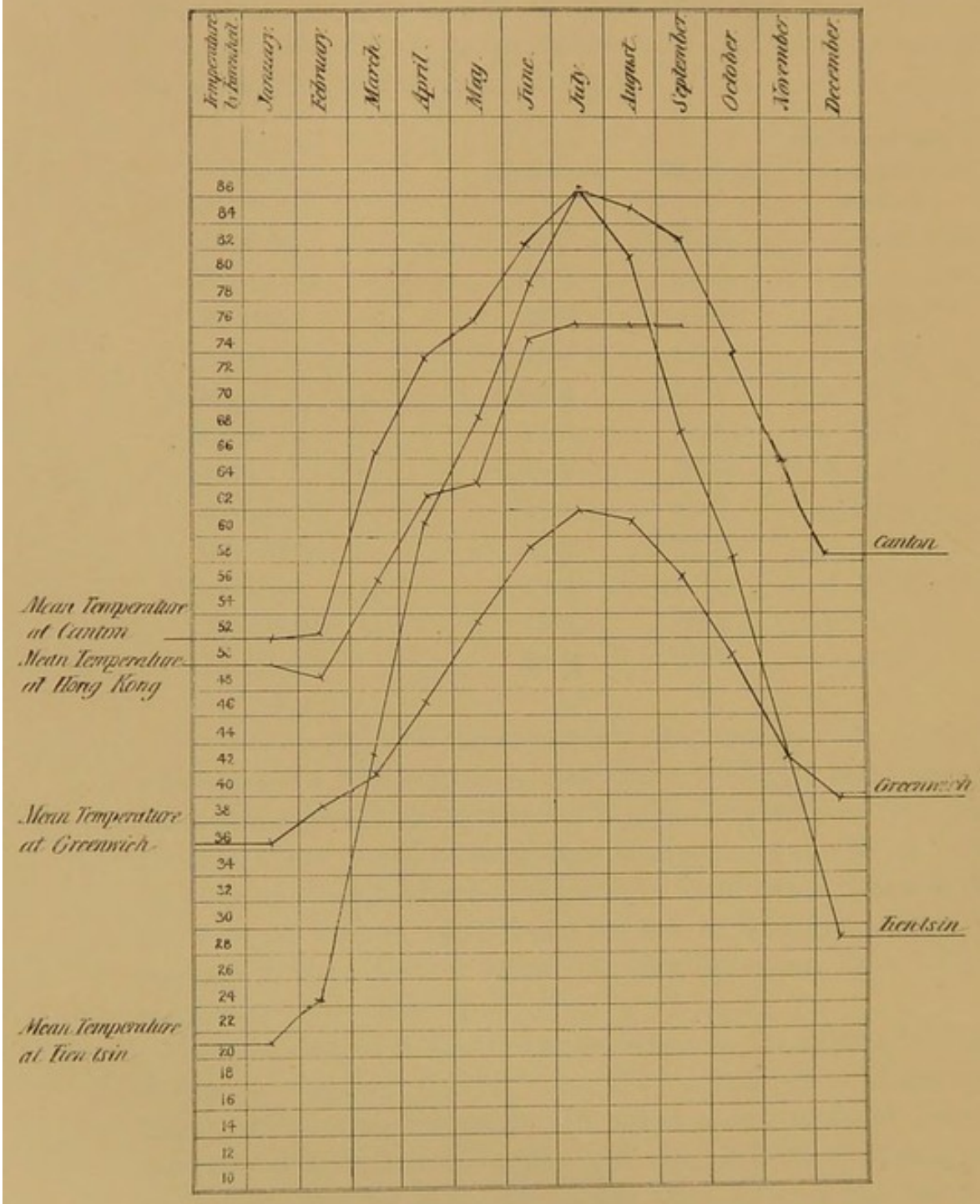
The following comparison is instituted between the mean temperature of each month at Greenwich, and as observed at Tein-tsin; the former being taken from Drew's Meteorology, the latter from our own record, viz.:

Month.	Greenwich.	Tein-tsin.	Difference of Tein-tsin as compared to Greenwich.
January . .	35·7	20·2	— 15·5° Fahr.
February . .	38·2	23·8	— 14·4
March . .	40·9	41·8	+ 0·9
April . . .	45·7	60·0	+ 14·3
May . . .	52·6	67·7	+ 15·1
June . . .	58·0	78·5	+ 20·5
July . . .	61·3	85·8	+ 24·5
August . .	60·5	80·5	+ 20·0
September . .	56·3	67·2	+ 10·9
October . .	49·3	57·5	+ 8·2
November . .	42·4	42·5	+ 0·1
December . .	38·8	28·0	— 10·8

The above, especially if examined in connection with the chart which follows, will convey a very correct idea of the points of difference between the climate of England and that of Tein-tsin. By that chart it will be seen how applicable to the latter is the appellation of an "extreme climate." In winter it descends far below what we are accustomed to see in England; while in summer it rises further above the English mean than it had previously sunk below it.

As compared with the temperature line in the south of China, it will be observed by the chart that a very great difference exists: thus, while at Canton the mean temperature of July is precisely what it is at Tein-tsin, the temperature of January at the latter place is about 31° under what it is at the former. There is another great difference between the climates of the two places, however, which this chart does not show: it is the general moisture of the air at Canton during at least half the

The subjoined Chart represents the line of Monthly mean Temperature at Tientsin, Hong Kong, Canton & Greenwich.



year, and the comparative dryness of it at Tein-tsin; and to this circumstance is no doubt attributable in a great measure the different phenomena of disease at the two places.

The line of temperature at Hong Kong is unfortunately deficient, in consequence of the want of continuous observations. From the small portion given, however, we observe that the actual summer heat there is considerably under that of the other two places. Here, again, it is not the temperature that decides the type of endemic disease; it is the humidity of the atmosphere, the infrequency and uncertainty of a breeze, and no doubt, also, local emanations from the soil, which is still being broken open for the purpose of forming sites for houses there.

CHAPTER IX.

HYGIENE OF TEIN-TSIN.

Remarks upon the distribution of the troops in the city of Tein-tsin, and the hospital established for them.

The British expeditionary force having effected the capture of the Taku forts, rapidly advanced to Tein-tsin, and encamped upon the large plain which extends southward from that city; a temporary hospital having on September 8th, 1860, been established in a series of native buildings in the vicinity of the camp, known as the Temple of Oceanic Influences.

On the 12th of the same month a small portion of the force advanced towards the Chinese capital; the sick belonging to it being left behind, and taken into the recently established hospital. Tents were also pitched for the accommodation of men who might be expected to become ill; and thus, when on negotiations being broken off, and the army making a general advance upon Pekin, the whole of the sick were readily provided for.* This advance, it may be well to note, began on September 28th.

The hospitals remained as originally found until the return of the force after the purposes of the expedition had been effected; a brigade being left behind at Tein-tsin, during the time that the body of the army was actively engaged in the front. Arrangements being speedily made for despatching regiments whose services were no longer required in the north of China, the force was soon reduced to the strength deemed

* This information I obtained from medical officers who were on the spot at the time.

sufficient to hold Tein-tsin during the ensuing winter, or until the necessity for military occupation of that city should, in the opinion of the responsible authorities, cease.

By this time the cold weather was rapidly setting in; it was, therefore, deemed advisable, upon sanitary as well as upon other grounds, that the troops who were left behind for the winter, as well as the sick belonging to them, should, with as little delay as possible, be moved into the city.

The annexed map of Tein-tsin—for which I am indebted to the courtesy of Captain Gordon, Royal Engineers—will give a very correct idea of the manner in which the British and native Indian troops were located in different parts, as well as of the position of the series of buildings occupied as a hospital for the white portion of the force. Residences of native gentlemen, and of the more wealthy tradesmen, were appropriated for the accommodation of the effective troops, who had to be divided into detachments of very various "strength," according to the size of the building available for them; one large "yamun," the property of a salt merchant, being taken up for the purpose of a general hospital. Rent was duly paid for the buildings thus occupied by the force, and such alterations made in them as were calculated to fit them up according to our ideas of what was necessary for soldiers. As a temporary measure, the doolies that had been in use by different regiments were fitted up on trestles, so as to be converted into very comfortable beds for the sick, so that they were, in these respects, well provided for.

In consequence of the shortness of the time allowed for fitting up the numerous buildings throughout the town, into which it became necessary to quarter the troops, workmen had, for some time after they entered them, to be employed making the alterations that were necessary, in order that the men should suffer as little as possible from a winter of as yet unknown severity; for accounts had been so various in this respect, that no one knew what to expect, whether the mildness of a Devonshire winter, or the severity of that season in Siberia.

The various characters of the buildings that were thus transformed into barracks were somewhat strange; thus we had to adapt for the purpose dwelling-houses, mercantile establishments, public halls, and temples dedicated to different purposes,

as, for instance, to Confucius, to the idols of the Buddhists, and one even to his satanic majesty. These, from the nature of the buildings, were not by any means easily fitted up for soldiers.

A few brief remarks upon the nature of the principal alterations that were necessary will not, it is hoped, be deemed out of place. For instance, the native Chinese use no carpets on their floors as we do; in lieu of these they wear shoes or boots, the soles of which consist of felt, and are of sufficient thickness to prevent the possibility of cold or damp penetrating to the foot. The floors of the houses consist of flags, or bricks, or, very often, of nothing but mud, and have, according to our ideas, a look of great discomfort. Nor is this their only disadvantage; they have, indeed, several, one of which is, that they are, during the winter months, excessively cold. These defects were accordingly as far as possible remedied by having thick layers of matting placed upon them.

Fireplaces, properly so called, do not exist in the dwelling-houses of Chinese. An open charcoal burner, placed in the centre of the room, gives out a degree of warmth which does not extend far on either side, but at the same time sets free an amount of carbonic acid gas sufficient to impregnate the air of the entire apartment. Chimneys, grates, and other descriptions of fireplaces, according to our ideas, were accordingly erected. Wood, more or less green, was the fuel at first served out, 100 pounds being allowed daily for each fireplace. It was now found, however, that a change in the quantity of fuel was necessary; in fact, that the arrangements in this respect had to be placed upon an entirely new footing. The daily allowance of fuel was therefore ordered to consist of fifty pounds of wood, fifty pounds of country coals, and five pounds of charcoal, for each fireplace; the number of fireplaces depending upon the size of the particular room. On an average, it may be stated that throughout the winter season these rations of fuel were daily issued to every eight or nine British troops. These rations were issued to each guardroom, and two rations daily to every ten or twelve Seikhs. From this it will be easy to obtain an idea of the enormous amount of fuel consumed, and consequently that had to be obtained by the commissariat for the use of the troops.

Instead of sleeping-places, such as we are accustomed to see in use, the natives of this part of China use a contrivance as a bed which to us looks more like an oven than a bed, only that the people lay themselves down to rest *upon*, and not *in* it. At the end of the sleeping-apartment furthest removed from the door, is placed the "cang," or sleeping-place; it consists of a raised edifice of brick, extending from side-wall to side-wall, is about two feet high, and fills up the space to about the length of a full-grown person from the gable wall. The interior of this is so arranged that a flue is made to traverse it backwards and forwards several times, being connected at its exit with a chimney formed in the wall, and at the opposite extremity with a small fireplace in the front, and generally near one end of the cang. By this front opening fuel is introduced, and, being ignited, the celestial lays himself down to rest for the night. The very bedding of the Chinese is of a different nature to what we are accustomed. It for the most part consists of several layers of mats, furs, and quilts, upon which he lies down; his coverings being of the same nature, with the exception of the mats. The fire within the cang sends a current of heated air along the tortuous flue which traverses its interior; the warmth soon extends through its various coverings, and thus rendered comfortable for the night, the natives, packed as thick as they can lie, give themselves up to slumber.

For some time our soldiers had to sleep upon these bed-places, but as they were not heated in the manner just described as being adopted by the aborigines, they were found to be very damp; they moreover occupied more superficial space than could well be spared, and their removal was therefore decided on. Boards, with or without trestles, were supplied to the men, and upon those the soldiers slept. During the day they were easily put out of the way by being piled along the wall of the apartment, thus giving the greatest extent of space to the men that circumstances would admit.

The conformation of the houses themselves was of a kind very different to what, according to our ideas, is essential to comfort. For the most part they consisted of a succession of small, inconvenient rooms, connected by numerous narrow passages; the different buildings themselves, of which the better

class of domestic residences, warerooms, and temples consist, being separated from each other by yards of greater or smaller extent, and more or less elegantly ornamented, according to the wealth of the particular establishment.

It has often been remarked by visitors to China that the residences of the people, for the most part, are not of a greater height than one story. According to the philosophy of the people it is not proper that one man should raise his head above his neighbours. They therefore avoid adding additional stories to their houses, or building them in the first instance of a greater height than what has just been mentioned. As the worldly means of a native increase, he increases if possible the superficial extent of his "yamun" or residence. He does not, it is true, raise his house above that of his poorer neighbour; he simply squeezes him out of his place, or renders him extremely uncomfortable in it.

The arrangements of not a few establishments such as these had to be materially altered; walls and partitions were accordingly displaced or removed, and the aspect of the entire place altered in various respects, so that the owners of the premises must on many occasions have had considerable difficulty in recognising their own residences. Temples and public halls had fewer walls than private residences or mercantile establishments; their interior was much less subdivided into small compartments; the front was always open from end to end or protected from the outer world by no more substantial partition than lattice work. In order, therefore, to fit these places up for our men, it was necessary to supply at least one wall to each, and sometimes to erect partitions across the immense space that one of their halls covered. Alterations such as these could not be effected at once. Day after day, during upwards of three months, the engineer department was busily occupied in effecting them; yet economy was as far as possible observed; and it does not appear that the whole of the alterations necessary for the comfortable location of our force cost our Government a greater sum than £2000.

Under no circumstances do the qualities of commanding and other officers make themselves known for good or for evil so much as when, as was the case at Tein-tsin, provision had to

be made rapidly, and yet with very imperfect means, for protecting troops from the effects of a winter of an as yet unknown degree of intensity. Under no circumstances, either, does the degree of cordiality that exists between commanding officers and surgeons of regiments become so apparent, as in circumstances like the present, to exert a favorable influence or the opposite upon the comfort and well-being of their men; nor is it difficult for a person who has had some experience of regimental life to tell from the general state of barracks, clothing, and food of soldiers what amount of deference is paid to the suggestions of the medical officer.

As a general rule, there seemed to be every desire on the part of individual officers to render the soldiers as comfortable as circumstances permitted, both as regards their barrack accommodation, their clothing, and bedding; there were some respects, however, in which it was considered that further improvements might be effected; and as a preliminary measure, medical officers were called upon to report upon the following points, viz.:

1. Are the accommodation, means of ventilation, and heating, as they concern the troops, satisfactory?
2. Are the sleeping berths, bedding, and clothing sufficient?
3. Are the quantity and description of meat, both salt and fresh, sufficient and good?
4. What is the kind and quantity of vegetable used by the men at dinner with their meat?
5. How many nights have the men in bed?
6. Is their clothing when on night duty sufficient?
7. Are their cooking-places good and sufficient?
8. Is the state of the latrines satisfactory?
9. How are the barracks and their vicinity kept clean?
10. Medical officers were requested to report upon any other sanitary matter not enumerated that they wished to bring forward.

Reports were soon afterwards received from the surgeons of regiments upon the matters above enumerated, in so far as they referred to their own corps; from these a summary of the requirements was drawn up, and submitted to the officer commanding on the spot, namely, Brigadier-General Staveley, C.B., who, upon the present occasion, as upon all others, employed

every means in his power to render the state of the troops under him as faultless as the circumstances of our position would admit.

Had some of our sanitary references and theorists, unacquainted with the exigencies of actual service, visited our barracks during the early period of winter, they would no doubt have seen much that was not in accordance with their ideas of what was necessary, although more practical men would have found in the arrangements made a great deal that was most creditable to the officers who were immediately concerned in planning and executing them.

Thus, persons who imagined that as 600 feet of air per man is declared to be necessary for the health and well-being of the troops, so therefore soldiers must, under all circumstances, have this amount, would have been sadly shocked to find that in some instances our soldiers during winter had not half that quantity. Various circumstances combined to bring about this state of affairs. In the first place, it was deemed to be advisable, in a political sense, not to dispossess of their buildings a greater number of the natives than could be avoided; in the second place, it was found that the intensity of winter advanced so rapidly that it was necessary to prepare, at once, the buildings in which they were being located; and in the third place, the scarcity of timber was so great that difficulty would have been experienced in obtaining a sufficient quantity to fit up barracks for the men, were they to have the regulated space allowed them in accordance with regulations.

As a general rule, the soldiers had each upwards of 350 feet of cubic space; a very few only, in consequence of peculiar construction of their apartments having somewhat less than that. Such, however, was the openness of the houses in which they were, that during the winter, when the thermometer during night was often considerably below zero, the air found egress in gusts through crevices and chinks, and through the ill-fitting woodwork, in a manner that gave to the men considerably freer ventilation than was agreeable to their feelings or beneficial to their health. We know that in tents and huts less cubic space is required for sanitary purposes than in buildings of a better

description;* and the one-storied houses in which our men were located were for the most part most assuredly not of a nature to prevent ingress of air than huts of European manufacture would be.

The formation of latrines is at all times a matter of great importance, and became especially so in a place where the winter climate was of such severity as at Tein-tsin; yet somehow or another it happens, or rather did happen until very lately, that neither as regards convenience, comfort, or cleanliness did these places obtain that amount of attention throughout the army that they required. The native Chinese, it may be observed, do not make use of them; hence contrivances of some kind had to be prepared for our soldiers, and for this purpose materials were scarce, and ill adapted. Deal boards and timber had been almost entirely expended for such purposes as making doors and partitions, and in providing bed-boards for the soldiers. Little was left for any other purpose, neither was it possible at the time to obtain more in the neighbourhood. The consequence was that latrines had to be fitted up in many instances, with no stronger description of material than matting. The protection that this afforded to the men was very inadequate; we were all aware of the fact, but then it was unavoidable. We were in the town as an army of occupation, and being so, there were many discomforts and inconveniences which, although unknown in garrisons and quiet quarters, were in our present circumstances unavoidable, and perhaps their bare enumeration may not be uninteresting to those who take an interest in the life of the soldier.

As connected with the hygiene of the troops, it may be here mentioned that during the winter season, so intense was the cold, that with a view to remove as much as possible the necessity for men to go from their warm beds into the cold air, urine tubs were allowed to be placed in their barrack rooms, care being taken to have them removed in the morning, and properly cleaned. Some of the more theoretical among the medical officers deemed it necessary to record their objection to so

* "In huts, or pavilions, especially if they be of one storey high, less cubic space is necessary than where numbers are massed together." (Miss Nightingale, 'Notes on Hospitals,' p. 94.)

obviously necessary an arrangement; these objections, however, were overruled; yet it appears to me that the objection forms an example of that want of discretion and tact in making due allowances for particular circumstances in as far as they render necessary some degree of modification in the stringency with which general regulations are to be applied.

Let us, for instance, consider the results that must necessarily follow in a climate like that of Tein-Tsin in winter, where the troops are deprived of what are certainly in themselves both unseemly and not always very clean utensils. The temperature generally sank to 10° Fahr.; not unfrequently to 5° and 6°; and on several occasions went down below Zero. For a short time it was found that men deprived of the tubs in their barrack rooms at night, had to go a distance of not less than thirty yards to the latrines. It is not to be supposed that these men took either the time or trouble to dress themselves warmly; they left their warm beds imperfectly clothed, rushed through the piercing cold air, stood for a time shivering with cold, in the latrine, then, rushing back to their rooms, returned to bed so chilled that natural warmth was often not restored in less time than an hour, sometimes not so soon.

The more delicate among the men, those who had already been the subjects of organic disease, and those predisposed to attacks of illness, obviously ran more risk by exposure such as this to become affected with illness of a severe nature than they would do had such exposure not been rendered necessary. Measures were therefore taken to remove the cause of such exposure, the supposed use of tubs in the rooms being as nothing when compared with the obvious evil occasioned by the want of them.

Incidental remarks relative to food and clothing of the troops are introduced in the division of this report which treats more especially of disease and its statistics, and to these remarks the reader is referred. In this place it may be mentioned that while the British troops were in the field their daily rations were as follow:

Biscuit	1 lb.
Tea	$\frac{1}{3}$ oz.
Salt	$\frac{1}{2}$ oz.
Rice	3 oz.
Fresh meat	$1\frac{1}{4}$ lb.
Sugar	2 oz.
Pepper	$\frac{1}{3}$ oz.
Rum	$\frac{1}{2}$ gill.

So soon as the troops entered Tein-Tsin, and thenceforward, their daily rations were as follow, viz.:

Fresh beef	$1\frac{1}{4}$ lb.
Bread	$1\frac{1}{2}$ lb.
Tea	$\frac{1}{3}$ oz.
Sugar	3 oz.
Rum	$\frac{1}{2}$ gill.

On two days a week, in lieu of fresh meat, the soldiers were allowed one pound and a half of salt pork, and three ounces of rice.

It is in the present day fashionable to condemn the practice of issuing to soldiers a daily ration of spirits. Many well-meaning men would have them restricted to coffee, tea, ginger beer, and so on. The amount of comfort afforded by any one of these would be very poor indeed in a place such as the north of China, where for the first and second milk is not obtainable, and where the intense cold requires some more powerful fuel to enable the vital powers to maintain the animal warmth than what ginger and "such small beer affords." Under such circumstances, I would, for my own part, allow the disciple of "total abstinence" to indulge in his beverages. For my own part, I would prefer something both hot and somewhat more potent; acting, therefore, on this impression, I should have been sorry to have seen the soldiers deprived of their daily ration of spirits.

The only respect in which it was deemed necessary to suggest improvement in the dietary was as regards the item of vegetables. Abundance was at all times procurable in the market, but here, as well as elsewhere, the soldier seemed averse to take the trouble of procuring a supply for himself, unless forced to do

so. Orders were accordingly issued by the officer commanding, to the effect that each man should be provided with a ration of succulent vegetables at dinner. There is no doubt that a continued neglect of this very necessary precaution would before long have induced a scorbutic diathesis among the troops, if not an actual outbreak of that disease.

The daily rations of the native Indian troops consisted of the following articles, viz.:

Rice or wheaten flour . . .	2 lb.
Dhall	4 oz.
Ghee	2 oz.
Spices	$\frac{1}{8}$ oz.
Curry stuff	$\frac{1}{4}$ oz.
Salt	$\frac{1}{4}$ oz.

Half a pound of meat per man was allowed to them on two days per week in addition to these articles, and in addition to all these the men were in the habit of purchasing fowls, ducks, fish, vegetables, and fruit according to their own desires.

In addition to the ordinary articles of clothing included in the regimental kit of a soldier, the men engaged in the expedition to the north of China, were liberally supplied by government with such as were likely to be necessary during the cold weather to which it was expected they were to be exposed. Those regiments that came on from India had these extra articles of clothing served out to them before leaving that country; those that proceeded to China from England had them issued to them at Hong Kong; nor was any difference made between native Indian and British soldiers in this respect. Similar description of articles were served to both; only that those given to the blacks were made in accordance with the pattern usually worn by them. These articles were as follows, viz.:

1 Blanket.
1 Great coat.
1 Cloth uniform coat.
1 ditto trousers.

2 Flannel shirts.
2 pairs of drawers.
2 „ woollen socks.
1 „ long boots.
1 „ ankle boots.

When the cold weather had set in with its full intensity, a still further supply of warm clothing was served out to the men, each person being gratuitously furnished with the following, viz. :

1 Fur coat.
1 „ cap.
2 Blankets.
2 Flannel shirts.
2 Pair flannel drawers.
2 „ woollen socks.
2 „ „ gloves.
1 „ long boots.

Sheepskin great coats were issued in such proportion as to enable each man while on sentry or picket to be provided with one ; palliasses were in some instances given to the men, and in others additional mats and rugs were supplied to them in order to render them the more comfortable when in bed. Stoves of various construction were placed in the garrison and regimental cells, so that the warmth of them might extend even to the divisions of these places.

Some of the regimental surgeons recommended that during the winter season the soldiers on sentry duty should be relieved every hour throughout the night : this arrangement would have rendered their period of rest even shorter than it was under ordinary circumstances ; the troops themselves were averse to it ; nor did any ill effects arise from the two-hourly relief being continued during the period of our occupation. The system of night patrols through the city was, during the winter, restricted as far as circumstances admitted ; the soldiers for picket duty being, however, kept in readiness to turn out at any moment.

Cleanliness in the barrack rooms and yards was at all times rigidly enforced ; these places being swept clean by the men

themselves, and the refuse carried away by an establishment of coolies entertained by quarter-masters of regiments. The amount of filth, however, that existed in the immediate vicinity of the barracks, and throughout the town generally, was so vast as to defy any attempts that could be made for its effectual removal.

On the approach of the hot season succeeding the first winter of occupation by the troops, information was received to the effect that Tein-Tsin was not to be evacuated; measures had to be taken with a view to have the buildings already occupied by the troops altered so as to become fit places for them during the ensuing summer. The principal measures that were required in order to effect this, were to give ample means of ventilation and to increase the cubic space allowed to the men. The former of these was effected by breaking out ventilators in the back walls and in the roofs of the buildings; the second, by hiring for the time being additional temples and private residences, so as to give to the men, on an average, one third more accommodation than they had occupied during the cold weather.

Nor was this all that had to be done. Early in summer our hopes were depressed by being informed that certainly a considerable portion of, and perhaps the whole force would be required to hold the city throughout a second winter. A third series of alterations in the buildings occupied by the troops was thus rendered necessary; obvious faults, which circumstances had in the first instancer endered unaviodable, had now to be rectified, and many details to be fulfilled which the experience we had gained had taught us were necessary. It thus became necessary that I should review the whole of the circumstances of our location, in so far as these bore upon the health of the troops, and suggest such arrangements as were deemed to be necessary; other administrative medical officers may be similarly situated, and therefore it may not be inappropriate if for their benefit I transcribe the report furnished by me on the present occasion to the officer in command, and which was as follows, namely:

"Having received the orders of the Brigadier-General commanding to submit my views regarding sanitary measures deemed necessary in the event of this force being retained in

its present station during the ensuing cold season, I beg to offer the following suggestions :

"1. I consider that during the severity of the winter, the troops would be better accommodated and more comfortable in the city and in its suburbs than in huts built upon the open plain. Irrespective of other considerations, there is a difference of at least four degrees of temperature between the city and the country during winter, the city being so much the warmer; and this is a matter of great consequence when the reading of the thermometer is at and below zero, as we may, from the experience of last winter, expect it to be next. I think that the men may with every propriety occupy their present barracks, and other Chinese buildings of the same description, if a few arrangements now to be noted be made.

"2. I think that prior to the setting in of the intense cold it would be advisable that the fronts of barrack rooms should be built of brick to a height of four feet at least from the ground; or, if this be not practicable, that successive layers of matting be secured over the wood and paper which at present principally form the fronts, having windows placed of sufficient size to afford an ample supply of light to the inmates; that wherever wood-work is found to be defective it be repaired, so as to prevent the ingress of currents of cold air, and that porches be built to doors that directly face prevailing winds.

"3. That space should be so apportioned as that each room shall contain not less than 500 cubic feet per man. That where practicable, some of the very large rooms be divided by strong partitions, by which means greater warmth will be secured to their occupants than can be the case in their present condition.

"4. That where the floors of rooms occupied by men are formed of earth they be paved with tiles, or other materials adapted for the purpose; and that those that are now on a lower level than the surrounding soil be raised to one above it.

"5. That stoves should be as far as possible supplied to the barrack rooms, and where this cannot be done, that fire-places be constructed of a description to throw out more heat than the present ones do, their number being apportioned to that of the inmates of particular rooms. I would beg to note that a

very economical and efficient substitute for regular stoves were to be seen during last cold season in the hospital of the French.

"6. Small ventilators pierced through the walls at the eaves would during the winter be sufficient, a considerable draught of air being necessarily produced through fire-places and doors. The large ventilators will not be required.

"7. I consider that boards and trestles should be supplied to each individual soldier; that not less than two feet should intervene between these bed-places; that each man should with propriety be supplied with a wadded quilt to place under him, in addition to the proportion of bedding that was allowed last year.

"8. I think that the introduction of dining tables and forms into barrack rooms, in proportion to the number of occupants, would add much to their comfort.

"9. That in lieu of the present imperfectly protected latrines buildings should be erected for this purpose throughout the different barracks; these buildings to have regular doors and windows, and to consist of materials sufficiently strong to resist the weather, and afford the men complete shelter. The erection of separate urinals, the proper fitting up of bath rooms and ablution rooms, with an ample supply of warm and cold water, would undoubtedly tend much to both the health and comfort of the men. If a Chinese bath house could be rented during the season, the expense of building establishments of the kind might be avoided.

"10. The means employed last cold season, and still in use, for maintaining cleanliness in barracks and their vicinity, namely, the removal of filth by Chinese coolies, pioneers, and prisoners, appear to be sufficient.

"11. I am of opinion that it would be desirable to make such alterations in the kitchens of the men before next cold season, as that the cooking ranges should not smoke to the extent that has been complained of, and that, where necessary, the mat-sheds, of which most of the kitchens consist, be replaced by buildings of stronger materials.

"12. That the size of guard-rooms be ample for the probable number of occupants; and that sufficient boards, with or with-

out trestles, be supplied, so that prisoners brought in might not have to lie down upon the floors. It is also desirable that means of warming effectually the cells should be introduced, where this has not already been done.

"13. As regards the hospital, it will become necessary that, before the cold season sets in, the ventilators now being placed in the roofs of buildings be closed, and such smaller ones retained in the walls as now exist. In all the wards not supplied with Winchester stoves and heaters, I would recommend that fire-places be built, and that the present ones be put into an efficient state.

"14. With reference to the buildings that I have specially been ordered to inspect, I beg to report as follows, viz. :

"A. Treaty Joss House.—The lower floors of this building might, I think, be occupied by troops during winter in as far as sanitary considerations are concerned; but in the event of their being so, I am of opinion that the more central of the buildings within that enclosure ought to have verandahs of matting or other material, bound around them, so as to afford to the inmates shelter from the cold wind. I am of opinion that the upper storeys are too much exposed, to render it practicable that sufficient protection could be obtained in these apartments. I would notice the circumstance, that some of the walls of these bnildings appear to me to be in an unsafe condition, but of this the engineer officer is the only judge.

"B. The Temple on the river bank now in progress of being fitted up, is, in my opinion, in every respect eligible as a summer or winter quarter for troops.

"C. The building over the east gate of the city. The whole of this might be occupied by troops during the continuance of warm weather. And were the building encircled by a fence of matting, so as to form a verandah, the lower storey might, I am of opinion, be, without injury to the health of the troops, occupied also during winter, as the wind during the cold months seldom prevails from the direction in which the building faces. Of the upper storey, however, I have some doubts, unless means could be taken to enclose it also by mats, and this, from its construction, would seem to be difficult.

"D. I think that the corresponding building over the south

gate might with every propriety be occupied during the warm weather; but in consequence of its direct exposure to the cold winds that prevail during winter, I do not think that any part of it could be occupied during that season without injury to the health of the men; moreover, it seems to be very much out of repair.

"E. 'The Chamber of Horrors.' The buildings themselves forming this temple are, in my opinion, extremely well adapted for accommodation of troops. The neighbourhood is the only cause of objection, and it appears to me that it might be cleaned, and afterwards measures taken to preserve it in that state."

It is presumed that the present is a fitting place to give a few particulars in regard to the city of Tein-tsin itself, irrespective of what has elsewhere been stated in regard to the topography of this part of China.

The city and its suburbs extend to a distance of not less than three miles along the right or south bank of the river, including in its extent the point of junction of two smaller canals and the imperial one with that river; on the north side of the river, where the French were located, so dense do the suburbs become, that they form there what may be considered to be a supplementary town to the principal one.

As may be seen by the plan already alluded to, the city proper and the suburbs are continuous with each other; there is no essential difference between them as regards the style of building; in both, in the style of their streets, and general characteristics. Suitable buildings in both city and suburbs are occupied indifferently by the troops, as is most convenient.

The general form of the city is a parallelogram, surrounded, as already said, by walls of brick, which are in a very crumbling condition. With the exception of two spaces of considerable size at the south side of the city, which even in winter bore unequivocal marks of being covered by water during a considerable part of the year, and were, at the time, used for the double purpose of "necessaries" for the natives, and as places wherein they deposited the coffins of their dead; and two smaller spaces of similar description, situated one at each angle on the north side, the entire space within the walls was densely occu-

pied by the mud huts which formed the principal part of the city: these huts, which were almost all of one storey high, had sloping roofs, some consisting of no other material than the same description of mud which formed their walls; others, however, were rendered more waterproof by being covered with a layer of composition made of clay, oil, and hair; plumbago being also mixed up with it, apparently for no other reason than to give it the peculiar light blue colour that is so general in the roofs of houses in the north of China.

Four principal streets intersect the city, each protected by a gateway capable of defence against a native enemy. These streets are of tolerable width, and are paved with flags; drainage, however, although not entirely wanting, is so imperfect as to be next to useless. Branching off at intervals on either side, are numerous narrow lanes that seem to form a perfect labyrinth, so complicated is their arrangement. Few foreigners wish to enter these, being as they are dens of dirt, of vice, and disease; none of them are paved—their inhabitants are absolutely filthy in their habits, and totally devoid of either delicacy or modesty—hence the side streets are little better than receptacles of filth of the most odious description.

Outside the wall, a somewhat broad and rather deep ditch extends and completely surrounds the city. In the cold weather, it was filled with the same description of matter that occurs in such profusion throughout the streets. During the continuance of frosty weather, comparatively little inconvenience was experienced from its presence; but during the hot and rainy seasons, the effluvia that arose from it were offensive in the extreme, and could not have been otherwise than pernicious to the health of the troops. The facts must be borne in mind, that the two longer walls of the city were exactly a mile in length, the shorter ones about three quarters of a mile, and the population not fewer than 400,000; and it will be readily conceived how impossible it was for us, situated as we were, to cleanse the place; in fact, so deep were the obnoxious accumulations, that the more discreet plan was believed to be, not to pry too deeply into them. The supply of water was at all times abundant, having been furnished by the river Peiho as it passed through the suburbs of the town; a few wells were to be found in the yards

of some of the houses, water being obtainable at a depth of a very few feet from the surface. The degree of saline impregnation with which it is tainted, however, is so great, as to render it useless for any other domestic purpose than those of ablution, or for irrigation of fields. The river water, although comparatively slightly tainted with saline matters, is so to a certain degree, and is in other respects so odiously dirty when first drawn from the stream, as to be excessively offensive to the eye of a foreigner. These circumstances probably, in part, if not entirely, account for the custom the natives have of boiling the water they intend to use as drink, and generally infusing in it a small quantity of tea leaves. These, by their astringent properties, may serve the same purpose to them that areca nut does to the natives of India, and counteract to some degree the tendency to intestinal disorder which the use of impure water always gives rise to.

It is difficult by description alone to convey an adequate idea of the nature of the buildings at Tein-tsin that together were occupied for hospital purposes; the annexed plan may, however, in some degree diminish this difficulty. The entire number are contained within a walled enclosure, the front or east wall of which is 169 paces in length, the north 74, the west 178, and the south only 48. In front, the gate marked A, opens direct upon the main road, by which the greater portion of the traffic between the city and Taku takes place.

The river Peiho runs in a very tortuous course nearly parallel to this road, from which, immediately opposite the hospital, it is only separated by a single line of mud houses of one storey in height, such as form the mass of dwellings throughout the city. It will be observed by the plan, that a great degree of regularity exists in the manner of arrangement of the individual buildings occupied as a hospital; at the same time, there is observable among them a very incongruous variety: thus the general arrangement resolves itself into a succession of spaces, all of which are united by means of narrow and somewhat intricate passages. The individual buildings vary much in size and general form, so that no two of them are capable of accommodating the same number of sick. They are, moreover, so placed, that while one series of the rooms are not exposed to

the sun at all, others are so in too direct a manner. In the winter season, it was very evident that those not exposed to the sun were much colder than the ones that were more favorably situated; and this circumstance was observed, as might have been expected, to act unfavorably in regard to the manner in which recoveries took place among the patients that occupied them. During the hot season, on the contrary, the temperature was extremely oppressive at times in the apartments that directly faced the sun, and it became necessary to raise for their protection a series of shades such as are used by the Chinese themselves, and which consist of a series of upright beams, the height equal to that of the houses to be sheltered, matting being stretched across the top, and so arranged by means of pulleys and cords as to be readily folded up when necessary, so as to admit of ventilation.

The space thus appropriated for sick was considered to have been capable of accommodating about 250 patients; and this number, it was calculated, would not in all probability be exceeded, as all that had hitherto been said in reference to the climate of this part of China described it as remarkably salubrious. On the setting in of the intense cold of January, however, the number of our sick underwent so great an increase, that the capabilities of the original hospital was insufficient. Accordingly, the series of buildings in the smaller diagram of the annexed plan were fitted up for sick soldiers, and thenceforward were in constant occupation. It will be observed by the plan, that a portion of the buildings in question were converted into a hospital for sick Chinese. This portion was, however, kept altogether separate from that occupied by soldiers by a brick wall.

It would be difficult for a person not on the spot, and unacquainted with the nature of Chinese houses, to understand the great amount of alterations that were necessary before they could be fitted up for hospital purposes: much more had to be effected in the way of alterations than was necessary in the buildings occupied by effective soldiers; and all that had to be effected was so, under the superintendence of Staff-Surgeon H. V. Bindon, to whom much praise is due for the zeal he displayed, and for his great attention to the work.

It will doubtless sound strange to the ears of persons accustomed to the establishment of hospitals, when I mention that in ours at Tein-tsin we had no drains; and it will doubtless sound stranger still, when I mention that the building was all the sweeter in consequence of the want of them. One exception I must mention, as it was found after we had occupied the place for a couple of months, namely, a drain to carry off the surplus water from the wash-house; but what I specially meant was, that we had none for the conveyance of any other description of soil. A number of Chinese coolies were employed, who every morning and evening carried away and threw into the river whatever soil and slops had collected; a certain amount of inconvenience was certainly experienced after a heavy fall of rain, inasmuch as there being in some parts a very imperfect fall to carry it off, it for a time was thus able to collect in pools, but they soon too were dried up by the coolies, who carried away the surplus water.

The footing upon which this hospital was formed, and for some time managed, was that of a general hospital. According to this system, medical officers attended the sick in particular wards, altogether irrespective of the particular regiments to which the soldiers belonged; nor did medical officers necessarily attend the sick of their own regiments. As might be expected by any person acquainted with the interior economy of regiments, a system like this could not work long; accordingly, it had soon to be abandoned, and the establishments were then placed upon the footing of consolidated regimental hospitals, of which perhaps the best example in England is to be met with at Devonport.

Under the latter system, medical officers of regiments attended their own men—thus mutual interest was preserved between them; medicines for all were, however, prepared in a general surgery, provisions were cooked in one kitchen, and all issues made from one store.

Articles of ordinary diet; as, for instance, meat and bread, were obtained by the purveyor from the commissariat department; other articles, as eggs, fowls, vegetables, fish, and some more, were procured by the purveyor from a contractor who agreed to furnish them at a fixed rate; and tea, cocoa, milk, and

"medical comforts" generally were obtainable from the stores of the purveyor.

In China generally, but more especially in the north, milk is not used by the natives; the consequence is, that this article of food was only procurable in very small quantity and of inferior quality: all, therefore, that was employed for hospital purposes had to be obtained in a preserved state from England, and fortunately for the sick it retained its flavour remarkably well; so well, indeed, that when mixed with tea, and given in puddings, it was nearly as delicate as if it had been "fresh from the cow;" and even when given in the quantity prescribed for what is called milk diet, it was not found to disagree with the patients.

That every consideration was paid to the probable requirements of the sick, in providing the stores, with an ample supply of medicine comforts, will be apparent from the following list of articles of this nature that were provided for the strength of about 3500 men, who formed the force left in military occupation of the town. It will, moreover, be convenient, the more clearly to indicate the measures taken to maintain this supply, if I note the quantities in store at the commencement of winter, on the last day of March, 1861, and what were on the latter date applied for, viz.:

Articles in store.	Dec., 1860.	March 31st, 1861.	Required.
Ale	dozen 915	dozen 574	dozen 400
Porter	„ 115	„ —	„ 200
Port wine	„ 420	„ 339	„ 100
Sherry	„ 31	„ 31	„ —
Brandy	„ 46	„ 82	„ —
Champagne	pints 16	pints 16	„ 50
Milk	„ 18,800	„ 2374	gallons 3500
Sugar	lbs. 4,863	lbs. 1548	cwt. 50
Tea	„ 684	„ 245	lbs. 800
Calf's-foot jelly	dozen 29	dozen 10	dozen 60
Arrowroot	lbs. 792	lbs. 577	lbs. 168
Soap	„ 962	„ 679	„ 560
Soft soap, kegs of 32 lbs. each	63	„ 60	„ —
Seed potatoes	lbs. 241	„ —	„ —
Mustard	„ 354	„ 347	„ —
Salt	„ 423	„ 5	cwt. 10
Sago	„ 200	„ 841	lbs. 168
Essence of beef, ¼lb. tins, number	4881	number 3660	—

Articles in store.	Dec., 1860.	March 31st, 1861.	Required.
Preserved meats	lbs. 6019	lbs. 6019	lbs. —
„ soups	„ 405	„ —	„ —
„ vegetables	„ 668	„ —	„ —
Soda	„ 700	barrels 6	„ —
Pearlash	„ 700	„ 5	„ —
Oatmeal	„ 308	lbs. 224	„ —
Coffee	„ 140	„ 99	„ 50
Vinegar	dozen 8	pints 6	dozen 10
Lemonade	„ 52	dozen 28	„ 500
Soda water	„ 132	„ 159	„ 500
Gin	„ —	„ 4	„ —
Cape wine, for quinine	pipes 10	pipes 10	„ —
Barley	lbs. 1453	lbs. 128	cwt. 22
Butter	„ 10½	„ 10½	„ —
Candles	„ 1458	„ 104	lbs. 500
Opening knives	number 26	number 26	—
Lime juice	pints 401	pints 209	pints 540
Cocoa and milk tins	220	582	—
Preserved fowls	number 364	number 364	—
Rice	lbs. 360	lbs. 30	—
Condensed egg	„ 26	„ 26	—
Flour	„ 111	„ 6	—
Colza oil	—	—	galls. 100
Pepper	lbs. 78	„ 78	—

During our residence at Tein-tsin we ascertained that many articles could be got better and in a fresher state on the spot than from our stores, where a supply in a preserved state had been procured; thus, vegetables, flour, fowls, and some others, were after a time obtained from the contractor. An attempt was also made to obtain milk, but it failed, although there is reason to believe that, before long, we should have been able to succeed even in this respect.

A bare enumeration of articles is no doubt uninteresting; yet, as the object of all experience is, or ought to be, to form a guide for conduct on future occasions, I am induced to add to the above list of purveyor's stores the following one of those supplied by the barrack department, for the purpose of fitting up the buildings occupied as a general hospital. It will be seen that, in respect to them, as in regard to other matters, great care was bestowed by Dr. Muir, C.B., that nothing should be overlooked that tended to the comfort of the sick. The list is as follows, viz.:

Barrack Stores in General Hospital, Tein-tsin.

Baths, slipper	4
„ open	5
„ foot	6
„ hip	4
Baskets, hand, large	17
„ „ small	10
„ bottle, half dozen	10
Basins, earthenware, small for washing sores	60
„ wash-hand	216
„ soup, enamelled	130
Bedsteads, iron	200
Beds, hair	200
Blankets, hospital patients'	2016
Bolsters, hair	200
Case slips for hospital patients' hair bolsters	200
Pillows, hair, small	200
Rugs, hospital	298
Sheets, cotton	746
Pillows, feather	50
Palliasse cases, straw	198
Bolster, ditto	98
Rugs, barrack	50
Boxes, pepper	9
„ salt	3
Brushes, flesh	17
„ hand, scrubbing	20
„ hair	120
„ long sweeping, with handles	20
„ shaving	10
„ shoe, set	12
„ whitewash, box	12
„ dry-rubbing, with block-tin handle	12
Pail	1
Boards, knife	15
„ inventory	33
Cans, soup, 3-gallon	9
„ beer, 2-gallon	20
„ water, 3-gallon	26
„ milk, 3-gallon	—
Caps, night	500
Drawers, flannel	600
Gowns, blue serge	400
Shirts, flannel	600
Socks, pairs	1200
Slippers, brown leather	600
Trowsers, blue serge	500
Waistcoats, blue serge	400
Mittens, pairs	—
Cholera belts	730
Candlesticks, flat	52
Choppers, meat	2
Corkscrews	10
Cocks, brass, bib, driving	12
Combs, hair	170
Cups, spitting	121
Clocks	4
Coppers, field, small	3
Tripods for ditto	3
Dishes, hot-water, with covers	16
Meat-tins, 18-inch	49
„ 13½-inch.	105
Baking-tins	17
Egg-cups, pewter	100
Etnas, tin	10
Forks, carving, large	12
„ „ small	6
„ dinner	500
Filters, water, in wicker	11
Funnels, tin	30
Forms, 4-feet	20
Frames, close-stool, zinc	8
„ „ wooden	12
Bedhead utensils, tin	300
Gridirons	3
Glasses, wine	10
Hammers	8
Hasps and staples	24
Inhalers	10
Infusers, tea	14
Kettles, tea, iron 7-quart	10
„ „ 4-quart	3
„ „ 2-quart	2
Knives, carving, large	12
„ „ small	6
„ „ dinner	500
„ „ butcher's	5

Ladles, 1-quart	2
„ 1-pint	24
Lamps, hand	30
„ passage	16
„ surgery	5
Measures, wine, 1-pint	4
„ „ ½-pint	6
„ „ gill	9
„ „ ½-gill	5
„ porter, 1-quart	2
„ „ 1-pint	1
„ „ ½-pint	1
„ oil, 1-gallon	1
„ „ ½-gallon	1
„ „ 1-quart	3
„ „ 1-pint	3
„ „ ½-pint	3
Mats, door, coir fibre	85
Mittens, worsted, pairs	350
Nets, potato, large	32
„ „ middling	30
Pans, frying	6
„ bed, zinc	42
„ dust, zinc	37
Pots, chamber	271
„ coffee, small	10
„ mustard	6
„ tea	9
„ tin, drinking	164
Plates, crockery	237
„ dinner, tin	200
Porringers, wood	18
Padlocks and keys	22
Razors	10
Rollers and brackets	19
Saucepans, 2-gallon	4
„ iron, 1-quart	4
„ sets of eight	8
Spoons, table-	600
Saltcellars, wood	6
Saws, meat	2
Scissors, hair-cutting	103
Shovel, fire-	1
Scoops, hand, quart	7
„ „ pint	4
Skewers, iron	14
Stools, close, zinc	54
„ „ (Type's patent)	12
Snuffers	10
Sponges, bath	12
Steels, butcher's	5
Strops, razor	8
Tables, bed-side, new pattern	100
„ „ with trustles	26
Towels, hand	548
„ round	100
Urinals, pewter	62
Weighing machines, ¼-ounce to 7-pounds	2
Washing machine	1
Stoves (Soyer's)	6
„ (Winchester)	5
„ round	7
„ hot-air	3
„ heaters	9

As regards medicines and instruments, these were supplied according to the same liberal scale as those already enumerated; in fact, it may be said that they were supplied with lavish profusion.

The regiments stationed at Tein-tsin were all supplied with a full staff of medical officers; some of these were provided with quarters within the general hospital, others remained in barracks to perform the current duties there. In order to complete the working establishment of the general hospital, the following staff had been appointed when it was first set on foot, namely:

1. A medical officer to take administrative charge of the whole.
2. A purveyor.
3. A dispenser, in charge of medicines and the "surgery."
4. Wardmaster.
5. Assistant wardmaster.
6. A non-commissioned officer in charge of issuing store.
7. A head cook, and his assistants.
8. Clerk to purveyor.
9. Clerk to principal medical officer.
10. Barber.
11. Washerman and his assistants.
12. A man in charge of fuel store.
13. A man in charge of bath and ablution rooms.
14. Issuer in purveyor's store.
15. A non-commissioned officer as compounder of medicines.
16. A man in charge of native coolies, as scavengers.
17. Ward orderlies, supplied partly by the army hospital corps and partly by regiments; and, in consequence of the awkward construction of the wards, being entertained in the proportion of one to every eight patients.

Fortunately for us, no governor was appointed, nor was a functionary of this description needed. The drawback of our present system of administration is, that it is frittered away through too many "departments" already; and, in the present instance, no inconvenience whatever arose from the want of what is called a military head. The non-commissioned officers and privates employed within the hospital were attached to regiments for the purposes of discipline, and the administration of the hospital was without difficulty carried on by the principal medical officer.

Situated as we were, in a part of the country the nature of which was imperfectly known, there was considerable difficulty in laying down a scale of fuel that would be adapted for the requirements of the hospital. Stoves of various kinds had been sent up from Hong-kong, but they being too few in number, fireplaces had to be erected in many of the wards. The stoves sent were of different patterns, and thus required different allowances of fuel;—a committee of officers was accordingly

ordered to report upon this matter, and the following table exhibits the nature and quantity of fuel that in their opinion was daily required for each kind, viz.:

Description of Stove.	Coal. lbs.	Charcoal. lbs.
Winchester	25	10
Round	25	8
Hot air	25	8
"Heaters"	15	10
Ordinary fireplaces	40	10

During the long and severe winter, we had ample opportunities for testing the qualities of the different kinds of fireplaces; and we found that, no doubt from early habit and association, the patients preferred the open chimney fireplace to any other. There is no doubt, however, that it possesses certain advantages over all other means of heating a ward, inasmuch as it acts also as a most efficient ventilator—an advantage which no stove possesses in an equal degree. There is one disadvantage attending it, however, much of the heat is carried up the chimney, and thus wasted.

In the French hospital a contrivance, partaking in some degree of the nature of a chimney, and in part of a stove, was in use. It not only required much less fuel than did our English chimneys, but it diffused a greater quantity of heat through the ward. It consisted of a square brick contrivance, built in the ward itself, at some distance from the wall. Its dimensions were about three feet each way on the surface, and about two feet deep. The interior was so arranged as to form a place to hold the fire, and from the side next the wall a flue of brick and plaster, precisely similar to what we see in green-houses and conservatories at home, and of a length varying from six feet to nine, conducted the smoke to the chimney outside, where it escaped.

The construction of the fireplace itself was very simple. It was nothing more than a pyramidal aperture, so large in front as to occupy almost the whole space of the brick wall. Its bottom was flat, so that the wood, which was the only fuel used, could be piled upon it; the two sides and the top, however,

were made to converge, so that the "throat" of the flue was not more than four square inches in extent; thus a thorough draught was easily maintained.

Not only did this simple contrivance give out a considerable heat in front, but it did so also from its sides and top: the long flue also gave out heat like a hot-air pipe, and thus a larger number of patients could obtain the benefit of it than could possibly warm themselves at one of our fireplaces. The contrivance is moreover so simple, that it may at any time be easily built.

As regards the stoves in use, two descriptions only were at all of much advantage to the sick; these were the Winchester stove, and the "heater." The others, while coal, and even charcoal, could not be got to burn freely in them, gave out very little heat; and, as a consequence, the patients in the wards where they were employed, complained constantly of feeling cold: I may observe, however, that although of all stoves the Winchester seems to be the one best adapted for hospital use, it ought to be restricted to large wards, and then to be placed in the centre of the room, a long flue of iron tubing being made to convey the smoke from it; the heater, on the other hand, ought only to be used in small wards, and it is needless to observe that a vessel containing water ought always to be upon them; otherwise, stove warmth is not only most unpleasant, but injurious to the respiratory organs, by reason of its extreme dryness.

Iron bedsteads, with sacking bottoms, were speedily obtained from the stores, and provided for the greater number of the patients; for the remainder the bottoms of doolies were placed in the wards, and raised upon trestles to a height of about twenty inches from the floor. It was not possible to supply all the patients with hair mattresses and pillows, but all those more seriously affected were thus supplied, the ordinary palliasses being given to the others. Nor did any complain of cold from having to sleep during the cold nights of winter upon these. It must be borne in mind, however, that two or more blankets were always between their bodies and the palliasse; and that, whatever amount of bedding was deemed necessary for the men, was at once supplied from the purveyor's store; so that, what

between the fireplaces and stoves in the wards, and the amount of bedding given, the sick, even during the most intensely cold weather, had the advantage of being kept comfortably warm in their wards.

When the hospital was first established, it was not possible to supply the patients with sheets, as there were no means of washing them at that time, nor was it by any means an easy matter to get even the bedding and clothing that could not be dispensed with washed and dried; after a time, however, a proper laundry was erected, and a drying-room established, in which, by means of a number of stoves kept constantly burning, bedding and clothes could be dried during the coldest part of the year.

The plan adopted for maintaining a supply of water for the sick was simple enough: one of the large, deep, earthenware vessels employed by the Chinese for the same purpose was placed outside the door of each ward, it not being in accordance with our ideas of hygiene to have such utensils inside the rooms, as they keep them: we had in this, however, an illustration of the unexpected results that follow from not adopting the particular customs which the circumstances of a country render necessary.

In the houses of the Chinese into which we were permitted to enter, we saw at all times an abundant supply of water; the vessels in which it was kept always looked neat and clean, and in the coldest weather their contents were always fluid. Far otherwise with ours; no sooner did the great cold of December set in, than the water began to freeze in them; this continued until it actually became necessary to break out the masses by force, and afterwards to melt them so as to convert them into water.

The violence thus used, and partly the force of the ice itself in progress of formation, caused the destruction of almost all the jars, and it was not at all times an easy matter to have them renewed. At last, the experiment was adopted of encasing these jars with a quantity of straw and matting. This partly, but not to a full extent, succeeded.

A few patent filters had also been supplied from the purveyor's store, but they soon became useless. It must not be supposed

that during midwinter we were able, with all our contrivances, to maintain the temperature of the ward at a point above the freezing; such was by no means the case; on the contrary, towards morning, when the fires had become extinguished, the temperature often sank far below it; the consequence was, that the water contained in the stoneware filters rapidly became frozen, and burst these vessels.

The Chinese, as already stated, have a prejudice against building houses of more than one storey in height. In some measure there is an advantage, in a sanitary point of view, in this arrangement. It prevents the congregation of masses of human beings upon a very limited space, as occurs in our large English and other European cities, and in all probability moderates considerably the degree of fatality of epidemics among the people.

If it has an advantage in this respect, however, it is to be feared that this is much more than counterbalanced by the injurious effect we have reason to believe it exerts upon health, certainly of the British, who temporarily occupy such buildings, if not upon that of the native children of the soil themselves.

Ground-floors have been found, in the south of China, to be especially unhealthy; in fact so much so, that the bungalows built upon the Indian models, in which Europeans at first resided, have of late years been entirely discarded, and now the dwelling part of the houses are invariably upon an upper floor, the lower being used only for the purposes of stores and offices. From what is stated in another part of this report, it appears that the soldiers of one regiment, in particular, are believed to have suffered from disease directly attributable to terrestial emanations; we may therefore fairly take it for granted, that the sick at Tein-tsin labour under a very great disadvantage in having to remain upon a ground-floor. The same remark applies, although in a less degree, to the greater number of the healthy troops, all of whom, except a few of the 67th Regiment, who occupy the upper part of a temple, being accommodated upon ground-floors.

Matting was placed upon the floors of the hospital during the cold weather, but it is questionable if any advantage arose from the measure. Dirt accumulated underneath; the

mats themselves became ingrained with it, and although very often changed, I am of opinion that except in so far as appearances were concerned, the wards would have been better without it.

Shut out as our force was from the world for several months, it would have been very desirable had it been in our power to supply the convalescents with means of occupation and amusement. This, unfortunately, could only be partially effected; a few books and games had been obtained for them, and after a time newspapers that had been sent out from the war office found their way to the north. For want of any better means to interest the men, and to withdraw for the time being their minds from their bodily ailments, an ambulance waggon, or more often a couple of these conveyances, were provided for the purpose of taking them a short distance into the country. This, as a matter of course, was only practicable during warm weather, so that throughout the winter it is to be feared the men must have been very dull indeed.

The spiritual wants of the men, sick as well as healthy, were fully attended to by the two chaplains attached to the force, and by some of the missionaries who, from time to time, visited men who did not belong to any one of the "established" churches.

Much has of late years been said regarding the supposed propriety of assimilating the hospital system of the British army to that of the French. During our residence at Tein-tsin, our medical officers frequently visited the hospitals of our allies, their medical officers, in like manner, occasionally visiting ours; and our two systems were frequently made the subject of conversation and comparison.

A very few words will explain their general hospital system. The "administration" decides upon the building to be occupied as a hospital; apportions the sick to particular wards; appoints their subordinate attendants; looks after the cleanliness of the wards, the state of the bedding, clothing, and food of the sick. The duty of the medical officers is confined to prescribing for the sick.

These officers, on reading our regulations, one and all expressed their sense of the superiority of our system to theirs; with us, on field service (as all our establishments were consi-

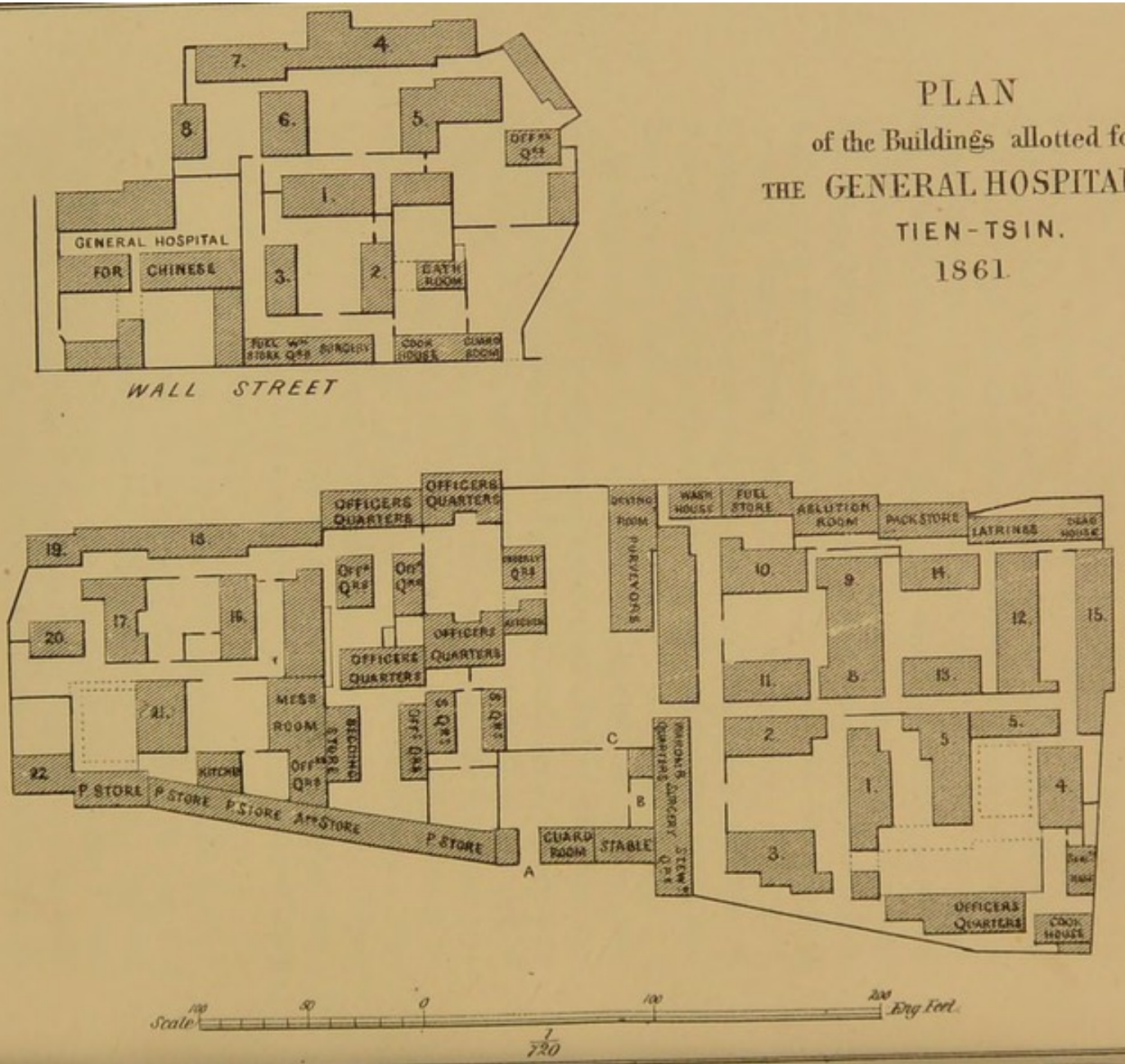
PLAN

of the Buildings allotted for

THE GENERAL HOSPITAL AT

TIEN-TSIN.

1861



dered to be), the principal medical officer was alone held responsible that the requirements of the sick should be in every way supplied; and to enable him to effect this, full control was permitted to him over all matters connected therewith. Such was the system which the French admire with us, and wish they could obtain the introduction into their department; yet there has been a powerful attempt made to reduce it to the dimensions of what our allies themselves decry as a most faulty and imperfect model.

CHAPTER X.

MORTALITY OF TEIN-TSIN.

Statistics of Sickness and Mortality among the British and Native Indian Troops at Tein-tsin.

With a view to illustrate the relative degree of prevalence of particular diseases among the troops occupying Tein-tsin, according to season, the plan presents itself of considering some points connected with their statistics according to particular months. It is hoped that this method will the better enable the reader to trace, by means of the tables and notes of meteorological observations given in another chapter, the dependence that the type of disease here had upon weather.

It is necessary to premise that the statistics now about to be given, date only from the 16th of November, 1860, that being the date on which the General Hospital in Tein-tsin was established. It must also be mentioned that on the departure to Hong Kong of the regiments and corps that were not required for the force of occupation during the winter, all their own sick accompanied them, except a very few whose cases were of so severe a nature as to render their removal unsafe. The fact is also to be borne in mind that, of the regiments ordered to remain, all the men who were in a state of confirmed bad health had previously been sent on board invalid ships. Except, therefore, the small number of very serious cases already mentioned, we may consider that the rate of sickness, as shown in the various statistical tables connected with this chapter, represents tolerably nearly the amount that actually occurred during the occupation of Tein-tsin, and for the months to the statistics of which I have had access.

Commencing, then, with the month of—

November, 1860.

We learn from the returns that the rate of occurrence of fevers and of chest affections among the troops, was, as nearly as possible, equal, but that bowel diseases prevailed among them to a degree nearly three times greater than either of these two classes. Among Seikhs, on the other hand, bowel and chest affections were equal in their rate of occurrence. Fevers were altogether absent; and, in both British and Asiatics, diseases of the liver prevailed to a very inconsiderable degree.

The statistical records kept, clearly show that during the month the men of different corps have been affected in very different ratios with the diseases noted, although in their duties, exposure, and manner of living, there has been very little difference. It is not easy either to explain why certain diseases prevail more in one regiment than in another; yet we see in every day experience that this frequently happens.

The rate of admissions during the half month would give for the year among British, 161·28 per cent.; among the natives of India, 138·00. Among the latter no deaths occurred, but among the former there happened, from catarrhus chronicus, 1; hepatitis acuta, 1; dysenteria chronica, 1; diarrhœa, 2; total, 5; being in the annual ratio of 3·12 per cent. of strength.

This ratio must be considered small when we bear in mind that the troops had shortly before been exposed to considerable fatigue; and, moreover, that it includes two of the class of men already alluded to as having been left behind on the departure of their regiments. Circumstances of a similar nature must, as a matter of course, always happen on service to invalidate local statistics, so that in no case can they represent more than an approximation to fact.

During the half month we found that in a strength * of 3585 British, there were 234 admissions into hospital. The discharges were 214, the deaths 5. Thus, there was an increase in the number of those "remaining" sick at the end of the month of fifteen, a very considerable increase, considering that

* It may be well to mention that the strength and per-centages given in this chapter represent the force stationed at Taku and Tein-tsin. The numbers given in the meteorological tables include only those forming the army of occupation in Tein-tsin. Hence the apparent discrepancy.

the cold weather was now setting in with considerable severity. The strength of the Seikhs is laid down at 313, of this number, 18 admissions took place, and only 12 discharges; thus giving a very large increase in the sickness on the last day of the month, as compared to that in the middle of it. It may, therefore, be briefly stated that, during November, the admissions exceeded the cures in the population of 0·55 per cent. of strength among the British, and as much as 1·90 among the Asiatics. Thus, we have had an increase nearly four times as great among the latter as among the former; and if we compare this with the admissions, we shall see that, although there was actually a higher rate of admissions among the British than among the Seikhs, the proportion of cures was also greater, even making allowance for the five fatal cases that unfortunately happened.

As regards officers, the strength of this class at Tein-tsin during the latter half of November, 1860, was 125, of which number 7 were admitted on the sick list, being in the proportion of 5·76 per cent. for the period, or 138·24 per cent. per annum; a proportion which is surprisingly near that of admissions among the Seikhs, although considerably less than what they were among the soldiers. One officer died, but it would be manifestly absurd to say that the rate of mortality thus represented among the class ought to be adopted; it would give the frightful rate of death of 19 per cent.

December.

The rate of admissions during this month was among the British in the proportion of 11·52 per cent. per month, or 138·24 per annum; among the Seikhs 21·15 per cent. per month, or 253·80 per annum. Of the British who died during this month was a young recruit, who had but two days previously arrived at the station, after a cold and fatiguing march from Taku. He must have died suddenly during the night time, as he was discovered a corpse in the early morning, and it was believed that he had gone to bed in a state of intoxication. In his case enlargement of the heart was discovered in the post-mortem examination, and the presumption seems legitimate that the severe cold to which he had been subjected, induced

an overloaded condition of the heart, which that organ was unable to throw off, and that death was the result. Here, then, is one effect of great cold, which it may be interesting to note.

The rate of mortality during the entire month was, among the British, in the proportion of 5·52 per cent. per annum. This rate is somewhat high, but in the numbers, as during November, are included some whose cases more properly belonged to the portion of the force that had gone away.

No fatal case seems to have occurred among the Seikhs. A comparison of the returns of the two classes, however, will show that the degree in which these men suffered from climatorial diseases was much greater than that in which the British were affected. The diseases in which the greatest difference, to the disadvantage of the Seikhs is apparent, are fevers, chest affections, and rheumatism; while they suffered less from bowel diseases than the British; and liver diseases were among them altogether absent.

Much of the interest of establishing comparisons, such as I am here endeavouring to institute, arises from the difference in the habits and clothing of the two races, rendering one, it might be presumed, better adapted than the other to bear extreme climates.

In reference to smallpox, which has appeared in the force, it is of importance to note that this disease first appeared among the men stationed at Pekin, in the person of a soldier of the 67th Regiment. The next case also occurred at Pekin. A few cases occurred during the month of November, and seven cases occurred in the present month of December, one death happening among those under treatment. The outbreak of the disease has so far been slight; its origin attributed to the soldiers being in some instances provided with the bedding of natives upon which persons similarly affected are believed to have lain. One death was also attributable to what would seem to be rubeola maligna. It, and some others that I have had occasion to observe, was, in all probability, undeveloped smallpox, where, from constitutional peculiarity of the patient, the eruption did not appear freely, and where the vital powers may be said to have been completely oppressed by the morbific poison.

Among the officers during this month, we find that in an

average strength of 108, 4 remained on the sick list, 15 were admitted, and 1 died; giving a ratio of admissions of 13·88 per mensem or 166·56 per annum, that is, they seem to have been sick in a very considerably greater proportion than the non-commissioned ranks.

January, 1861.

Detachments of recruits that joined the force towards the latter end of last month considerably altered the average strength of the latter. Thus, our strength for the month now under notice has been 3516 British, including those at Taku, and 292 Sikhs.

The admissions shown by the monthly returns as having occurred during January among the above numbers, are 473 among the British, and 40 among the Seikhs, giving a ratio of 13·45 per mensem or 161·40 in the former, and 13·79 per mensem, or 165·48 per annum among the latter.

Of the above numbers, twenty-three British died at Tein-tsin and Taku during January, twenty-two of the casualtie occurring at Tein-tsin; this gives a death rate per cent. of ·65 per mensem, or 7·80 per annum. Among the Seikhs, on the other hand, only one death took place during the month; giving thus a death rate of ·34 per mensem, or 4·08 per annum.

The difference between the death rate among the British and Asiatic troops is remarkable. We had naturally expected that the intensely cold weather which during midwinter prevails in this part of China would have proved far more trying to the constitutions of the latter than of the former, yet the opposite has in reality been the case; while among British soldiers we have had a ratio of mortality during the month of Jauuary equal to that at Hong Kong during September and October, which are the two most deadly months there.

It is not easy to find a plausible reason for the circumstance of the rate of mortality having been so much smaller, as it has been, among the Seikhs than among the English soldiers. Not one of the former has died from any of the diseases dependent upon temperature or climate, and although their ratio of admissions has been higher for the month than ours, still the nature of the cases admitted was usually slight.

The Seikhs are said to be more temperate in their habits than our men, but this is only partially true. As a race, they are very partial to strong drinks, and moreover, it does not appear that more than three deaths out of all those that have occurred among the soldiers can be attributed to indulgence in this vice. I have it from the principal medical officer of the French troops at this station, that among the soldiers of that army, who certainly are more temperate in their habits than the British soldier, the ratio of deaths to strength, during January, was greater than with us.

The numbers of the Seikhs are too small, and the period of observation too short, to justify us in drawing any conclusions from such data as they may give; we therefore merely state the facts as they occurred.

Among the British, the range of the thermometer exerted a remarkable influence on the progress of particular diseases. Affections of the stomach and bowels became seriously aggravated by low temperature, death in some instances taking place somewhat unexpectedly when a sudden fall took place in the downward range of the mercury in the thermometer. In cases of such a nature, post-mortem examination revealed the fact that organic disease of old standing had existed; and the circumstance was in some respects of importance, that the appearances discovered were enlargement of the viscera, especially of the heart, liver, spleen, and kidneys. In fact, men affected with previous organic disease were liable to be swept off suddenly on the occurrence of very cold weather.*

* It may be remembered that the month of January in England was remarkable for its coldness, and that the public health suffered severely as a direct result. It will moreover be seen, from the annexed extract from the 'Observer' newspaper of the 20th of that month, that the causes of death in London at that time bore a remarkable similarity to those that were observed at Tein-tsin. According to that paper, "The late severe weather has fearfully affected the public health. The deaths in the metropolis during the last fortnight have been more than 700 above the average for the past ten years. The old, especially, have suffered. Many aged people who might, humanly speaking, have survived for some years, have been cut off with terrible suddenness. The returns of the Registrar-General, when they come to be analysed, will show a greater number of sudden deaths than have, perhaps, ever been recorded before in this country. The intense cold, in fact, paralysed the whole system of persons stricken in years. The prevailing causes of death have been pneumonia, congestion of the lungs, and apoplexy. In the city

In December we had occasion to remark that among the Seikhs, a coincidence was observed between the rate of prevalence of fevers and of diseases of the stomach and bowels. This month a coincidence is also observable among them, namely, between the rate of occurrence of fevers and of pulmonic diseases.

By the statistical tables appended to these observations the fact becomes apparent that the rate of admissions from disease generally, was among the Seikh troops greater than among the British, although that of mortality was much smaller among the former than among the latter.

In fact, the man of the Seikhs who did die, lost his life by a cause altogether unconnected with local climate. He had been an old opium eater, and had thus fallen into a state of general cachexia. He became infected with syphilis, and having clandestinely had recourse to native medicines, salivation became induced in so violent a degree, that in his already weak condition, he sank from its effects.

During the present month, the class of diseases by which the greatest amount of mortality was occasioned, was fevers; next in frequency, pulmonic diseases; and next to them, intestinal disorders. Medical officers who had the immediate care of patients, however, have remarked the circumstance of a great liability existing, for men to become attacked with a succession

of London the mortality has been excessive. The average number of deaths in the corresponding weeks of previous years have been 67; during the past week the deaths numbered 95, being only seven less than the deaths in the week when the cholera was most fatal in the City of London in 1848. Last Thursday week, when the whole of the metropolis was enveloped in a dense fog, large numbers of persons were struck down as if shot. Dr. Letheby, in his report to the City Commissioners of Sewers, says, 'the quantity of organic vapour, sulphate of ammonia, and finely divided soot, in the atmosphere, was unprecedented. It amounted to nearly four grains in the cubic foot of air, and its effect on the eyes and the delicate bronchial membranes was most irritating. This is evidenced by the enormous amount of illness and mortality from acute pulmonary affections. Pneumonia, for example, has risen in the course of the last four weeks from only 1 death in the week to 11, the successive numbers being 1, 2, 5, 11, and bronchitis from 5 to 25.' In the City of London, nevertheless, the cold has not been anything like so severe as in many other parts of the country, where the thermometer has fallen several degrees below zero; and it therefore follows that if a less degree of cold has produced such a fearful increase of mortality, a still greater mortality may be expected where the cold was more intense."

of affections, differing in their nature. Thus, a patient admitted on account of one disease, in many instances, while undergoing treatment for it, may be seized with a disease of another organ or set of organs, and thus the maladies be accumulated upon him until, under their combined influence, he would sink and die.

The occurrence of, or severity of cases of frost-bite, during the very cold weather of this month were not so great as might have been anticipated. This is without doubt attributable to the great care that was bestowed upon warming the barrack rooms and giving the soldiers an ample quantity of warm clothing during the day, and warm bedding during the night. Only one case of "gelatio" appears in the returns. It was of a trivial nature, and occurred in an old soldier of dissipated habits, who, while imprisoned in the regimental cells, had his heels and the tips of the fingers "bitten" to such a degree that they shortly afterwards became covered with vesicles, and these ran into obstinate ulcers.

The very different degree in which sickness and mortality prevailed in different regiments, must necessarily strike a person as strange. It is a well-ascertained fact, that both sickness and mortality sometimes prevail in a particular portion of a force in a greater degree than in another, without any cause being apparent why this should be the case; and also, that during a period of considerable duration the ratio of sickness and mortality throughout the whole will become nearly if not altogether equalised. In the present instance there is reason to believe that in the regiment that suffered in the greatest degree the men were not in the first instance provided with so good quarters as the others. This was unfortunately unavoidable at the time for this reason, that native houses had to be occupied, and afterwards fitted up as best we could for our troops.

There are, however, some other circumstances which I cannot help thinking have had much to do in the production of a larger amount of illness among the men of one regiment than another, and I trust the bare mention of my impression upon this subject may be of some use in drawing the attention of commanding officers, in similar situations to what ours at Tein-tsin was, to the absolute necessity there is that, in matters connected with the hygiene of the men under them,

ready and cordial assent should be given to the suggestions of the medical officer whose duty it is to bring under notice whatever is calculated to act prejudicially upon the health of the men.

In this instance it is to be feared there are grounds for the belief that in the regiment that suffered most the suggestions of the surgeons as regards providing the men with clothing and bedding, did not, when first made, meet with that ready assent on the part of the commanding officer which those of other medical officers holding charges did. The consequence was, that arrangements which would otherwise have been made early in the cold season, were not effected until late, and indeed after the men had begun to suffer.

Regarding the statistics of disease among the officers of the force, it is a somewhat strange circumstance, and certainly one which speaks loudly as to the effects of the peculiar habits of military officers upon their health, that the rate of sickness among them has been greater than among the soldiers, notwithstanding that the latter have had to take night guards and other fatiguing duties to which the former are not exposed. We find that the strength of officers given for the month was 154; of this number there were 26 admissions on the sick list; being in the monthly proportions of 16·75 per cent. giving an annual ratio of 210·00 per cent. that is, considerably higher than occurred among the soldiers.

February, 1862.

The rates of sickness and mortality among the troops have been considerably more favorable than they were during the preceding. The meteorological observations form the subject of a separate chapter. I will therefore only remark here that the averages given by the thermometer during this month and January were almost identical. We cannot therefore attribute the decrease in the rate of sickness and deaths on this occasion to any amelioration in climate, for none took place. The unpleasant alternative seems to be, that the intense cold of January swept away during that month almost all the sick whose maladies or constitutions rendered them incapable of

withstanding the influence of low temperature; for, as we have had many opportunities of observing, continuous low temperature is as powerful a depressant as is continuous heat.

One remark seems to be necessary in regard to this series of statistics, namely, that the numbers given from time to time represent those among whom the sickness and mortality that form the subject of succeeding calculations have occurred.

The strength of the force, as shown by the returns of the present month, has been 3473 British, and 291 Seikhs. The admissions have been 356 among the former, and 23 among the latter; thus giving for the white a ratio of admissions to strength of 10·25 per cent. per month, or 123·00 per annum; and among the blacks, 7·90 per cent. per month, or 94·80 per cent. per annum.

Seven deaths occurred during the month, including one soldier, who was found dead in barracks, and is believed to have died from excessive intoxication. These were all among the British; giving a ratio to strength of 0·20 per month, or 2·40 per annum.

No deaths occurred among the Seikh troops; and when we consider the moderate mortality among the British, as compared with the previous month, we cannot resist congratulating ourselves upon the favorable change that occurred in the severity of attacks of disease.

In order to make this difference of the death rate for the two months the more distinct, I will remark that were the rate of mortality of January to continue throughout the entire year, a regiment 1000 strong would lose by death from disease exactly seventy-eight men; whereas, were the death rate of February to continue throughout the twelve months in a regiment of that strength, it would only lose twenty-four men; so that in reality the difference between the rates of mortality among our soldiers at Tein-tsin for February as compared with January, represents a saving of human life equal to fifty-four men in every thousand per annum. Well, indeed, may we congratulate ourselves upon the favorable change.

The Seikh troops, as regards health, have still the advantage of the British, and considerably more so this month than they had in January, inasmuch as they have had no fatal case in

February; and whereas the rate of admissions per cent. among them was then 0·24 higher than among the British, it was during February as much as 2·35 per cent. below the rate among the whites—an enormous difference, and one which naturally leads us to inquire how is it to be accounted for.

I have considered this matter carefully, and have, after doing so, arrived at the conclusion, that the explanation is to be found in the fact, that every one of the British regiments and details here, except the military train, have, during the past few years, been exposed to climate and other causes, which necessarily impaired the sanitary condition of the mass. They had all been abroad, had come direct from India, and one regiment, the 67th—that which suffered most as regards the amount of sickness among the men, and also the amount of mortality—had been lately stationed at Canton, where the men suffered very severely from the prevailing fever at that place; those who recovered remaining debilitated, and with impaired constitutions, which were necessarily still further depressed by the operations of the campaign which has lately terminated at Pekin.

Following the arrangement already adopted, we come to consider the rate of prevalence during the month of diseases which depend upon climatorial causes. This, it is presumed, is made sufficiently explicit in the tabular form which is given in its proper place. If we compare the results of that table with corresponding ones for the month of January, we shall find that among the British a very great decrease had taken place in the rate of occurrence of all the climatorial diseases, with the single exception of rheumatism, which has attacked precisely the same number of men it did in January. Among the Seikhs a considerable increase took place in the ratio of attacks by bowel complaints; and strange enough, the rate of occurrence among them also was precisely what it had been in the preceding month. We moreover find that during February the Seikhs suffered somewhat more from fevers than did the British: so they also did in January. They suffered much less from both pulmonic and bowel diseases: so they also did in January. As regards rheumatism, the Seikhs suffered somewhat more than the British; but diseases of the liver are entirely absent

among the Asiatics. In both these latter respects, we have had a repetition of what was noted during the month of January. While among the British the rate of admission per cent. from climatorial diseases was, for the present month, 6·05, it was among the Seikhs only 4·11, so that in respect to this class of diseases, the latter were nearly one third more healthy than the former.

Not only have the diseases by which mortality during this month has been occasioned been in themselves inconsiderable in number, but, as will be observed on reference to the return, only one death has occurred from each, a point in which a great difference is observable between this and the preceding month.

Of the case of apoplexy, it is only necessary to remark, that it occurred in a man in whose brain a state of softening was discovered after death. A case of hydrophobia, which it it is almost needless to observe ended fatally, occurred in a portion of our force stationed at Taku, but is not included in the numbers that form the present series of statistics. The man in whom this terrible disease happened, was twenty-three years of age. He does not appear to have been actually bitten by a dog, but the fact transpired that a dog which he had had in his possession showed symptoms of rabies about three weeks previous, and had been on this account destroyed; the presumption is therefore justified that the animal may have licked his hands at some time or other while the man was fondling it, and that during the cold weather, which at the time prevailed, "chaps" doubtless existed, and thus the virus gained admission into the system. This case was detailed at length by the medical officer who had charge of it, and his account sent home with a view to publication.

As, during the month of January, we had reason to fear that cases of frost-bite might become common, it was satisfactory to find that throughout the present month our anticipations in this respect were not realised. The cases that appear in the returns under this head were of no greater degree of severity than the destruction of a small portion of cuticle. The exemption of the soldiers from this affection is evidently attributable to the care bestowed in supplying them with a sufficiency of warm clothes, and in attending to the comfort of their barrack rooms; but it is

also, no doubt, in some degree attributable to the generally dry weather we have had. The men were thus never liable to be exposed to wet. Had they been so, it is more than probable that their feet and toes might have suffered.

The statistics for this month, as for those gone by, indicate that disease and death prevail in very different degrees in different regiments. The circumstance has been in some measure accounted for, but not entirely so. In the case of the 67th Regiment, the defects in the barrack rooms were remedied as far as circumstances would permit. It is, however, to be borne in mind that the regiment had lately been stationed at Canton, where the men suffered severely from the malignant fever which prevails there from July to October; the sanitary condition of the mass was thus lowered, and in consequence, this regiment has been more prostrated by sickness, and has lost many more men since the late campaign than any other; with the military train, sickness seems to be in part accounted for among them, by the severe nature of their duties, exposing them not only to the weather, but without their being able to keep themselves warm by exercise, as they sit upon their horses; they are also, as a matter of course, liable to accidents. In other cases, however, as the Royal Engineers, and one portion of the artillery, it is to be feared the personal character of the men themselves has had a good deal to do in bringing about their high rate of sickness.

As among the soldiers, so among the officers, the rate of admissions has been smaller than it was in January. The strength for the month was 154, among whom 20 admissions on the sick list took place, giving the ratio of 12·98 per cent. for the month. As with the former, so with these; however, we must calculate what rate this would have given us, had the month, like January, contained thirty-one days. This would give us 22 admissions, that is, a rate of 14·28 per cent.; whereas, it may be observed, the ratio for January was 16·75, so that, both actually and theoretically, the sickness has decreased among officers as well as among soldiers.

Before concluding those observations for the present month, it may be interesting, in a statistical point of view, to subjoin a table, showing that among the officers, also, sickness attacks

those of some regiments more than others, and undoubtedly from the operation of the same causes which create the difference described among the non-commissioned ranks. The table to which I allude is as follows, viz.:

Regiment.	Strength.	Admitted.
Royal Engineers . . .	4	—
3rd Battery, 13th Royal Artillery	6	—
4th „ „ „ .	4	—
Military Train . . .	14	6
31st Regiment . . .	32	3
2nd Battalion, 60th Regiment .	30	1
67th Regiment . . .	32	7
Staff and Departments . .	21	3
Fane's Horse	11	—
Total . . .	154	20

It is very remarkable how these figures, if interpreted by a person accustomed to statistics, confirm the truth of the reasons just adduced! It illustrates another point, however, and one of very great importance: this has on a previous occasion been alluded to, but it may well be repeated. It is, that whereas the ratio of sickness from all causes has been among the soldiers in the British portion of the force 10·25 per cent. to strength, the above show that it has amounted among the officers to 12·99 per cent. per month, or 153·88 per annum. Thus, then, we have further illustration that the circumstances of the life of officers render them more liable to become attacked by disease than the soldiers under them, notwithstanding the coarse food, the night duty, and the supposed sanitary disadvantages under which the latter labour.

March, 1861.

During this month the admissions at Tein-tsin were among the British troops in the proportion of 9·20 per cent., or 110·40 per annum; among the native Indian soldiers 5·86, or 70·32 per annum; nine deaths, from all disease, occurred among the

British, thus giving a ratio of mortality per annum of 3·12 per cent. of strength, that is, precisely the ratio for November.

It is remarked that the Seikhs have still much the advantage of the British in respect to health; not only has the actual amount of disease among the former been smaller than among the latter, but no fatal case has occurred among them.

The greater prevalence of mortality by diseases of the intestines this month than the preceding, will be remarked in the numerical returns. The circumstance will also be observed, that in the fatal cases of these diseases, the length of time the patients were under treatment had been very considerable. This indicates that, although these men did not actually succumb to the depressing influence of the intense cold that prevailed during the month of February, they were so severely affected by it, that notwithstanding the favorable change which took place in the climate during the present month, their vital powers had already become depressed to a degree in which they were unable to derive advantage therefrom.

A few brief remarks may be offered in regard to the diseases by which mortality has been occasioned. The case of epilepsy occurred in a man who had, up to the time of seizure, shown no tendency to the malady. After a severe attack of the characteristic convulsions, he became unconscious, and continued so during the short time afterwards that he lived; a succession of convulsions occurred after his admission into hospital, and in a very severe attack of this nature he expired. His pupils during the time of his illness were contracted, respiration laboured, countenance pale. It was surmised that he laboured under chronic disease of the brain, and post-mortem examination revealed the consistence of that organ to be like putty, and as if it had been preserved in spirit; its density had, in fact, been much increased beyond its normal condition.

In regard to the case of intermittent fever, death is stated to have occurred in so short a time after attack as two days. The report of it states, that the man who was its subject appeared, when admitted, to be in the cold stage of intermittent fever; nor does it appear that he ever rallied from the state so described. After death great congestion was found to exist in the lungs and the liver. This was the only case at all approaching to a sudden

death which we had during the month: it can scarcely be said to have depended upon low temperature, as similar cases that occurred in the month of January evidently did. The state of the thermometer for a week prior to the admission of the case had ranged from a minimum of 20·8° Fahr., to a maximum of 59° Fahr. in the shade.

It is not often that a soldier so old as forty-two years of age is treated in hospital, for this simple reason, that few continue effective until they attain this period of life. One was unfortunately treated during the present month, and died. His case illustrates what has already been stated, that whereas the low temperature of the winter in the north of China seemed to exert a tonic influence upon the young and otherwise healthy, it appeared to have had a most depressing effect upon the old or those who had previously suffered from disease. The case further illustrates another remark that has been made, namely, that a peculiar tendency seems to be created here to men who are seized with one particular form of disease being attacked by several in succession—not unfrequently by one, and then another, while still affected with the one that had occasioned their original admission into hospital.

The soldier to whom I allude belonged to the 2nd battalion, 60th Rifles. He had been twenty-two years in the army, during which time he had served in the West Indies, in North America, at the Cape, in India, and finally in China. It appears that early last autumn he became affected with intermittent fever and dysentery, and on this account was sent on board a hospital ship. In November he was seized at Tein-tsin with bronchitis, and on this account was in hospital a month. On the 21st of Jan., that is to say, after the continuance for a week of a temperature ranging from a minimum of ·8 to a maximum of 31° Fahr., he was admitted on account of bronchitis, from which he again recovered. He was not discharged, however, as in the mean time he suffered from what is described as an attack of internal hæmorrhoids, but was doubtless the commencement of the attack of dysentery under which he finally succumbed; for it is recorded that "on the 16th of March he had an attack of febris c. c., which brought on his old complaint, dysenterica chronica, under

which he sank rapidly." This man's habits are stated to have been intemperate.

The Seikhs have suffered in a less degree than the British from climatorial diseases, except fevers; and contrary to what might be anticipated, they have, as heretofore, been affected by this class of diseases more than the whites. It is, moreover, interesting to note, that the ratio of prevalence of fevers among them during March and February, has been within a fraction of identical; thus, while this ratio of occurrence was in the former 1·72, it was in the latter 1·71 per cent. Pulmonic diseases in these two months were identical, but a considerable decrease took place in the rates of occurrence of bowel complaints and rheumatism.

From the ordinary returns we learn that, during the month of March, the sickness among officers, that is, the admissions at Tein-tsin, have been as under, viz.:

Corps.	Strength.	Admitted.
Royal Engineers . . .	4	—
3rd Battery, 13th Royal Artillery	6	—
4th „ „ „ .	2	—
Military Train . . .	13	6
31st Regiment . . .	35	3
2nd Battalion, 60th Regiment .	26	3
67th Regiment . . .	32	2
Staff, and Departments . .	25	1
Fane's Horse . . .	9	—
Total . . .	153	15

The difference in the strength of officers, as given last month, arises from the fact of one officer having gone to the south on sick leave, he having suffered from a dangerous attack of pneumonia in January last. Taking, however, the above numbers as they stand, we find that they show the rate of admissions per cent. to have been 9·80 per cent., or 117·60 per annum. That of the soldiers is shown to have been 9·20, so that, as on previous occasions, we still find the numerical amount of sickness to be greatest among the very class of men who ought, theoretically, to be most healthy.

April, 1861.

The admissions during this month gives us among the British portion of the force a ratio per cent. of 8·96, or annually 107·52. Among the Seikh troops the ratio of admissions in the month was 10·72 per cent., or 128·64 per annum; thus showing among them a great increase over what took place in the month of March, when the temperature was less genial than it became in the present. It was observed, however, that the attacks of disease among the Seikhs were of inconsiderable severity, and no fatal case occurred among them.

From the tabular form elsewhere given, we perceive that in respect to climatorial diseases, fevers and bowel affections have in their occurrence changed places, as it were, during the present month, as compared with March; thus, fevers were then most prevalent among the Seikhs, and intestinal disorders less so. During the present month, this is reversed. Rheumatism, also, has doubled itself in its rate of occurrence.

Theory has hitherto been at fault as regards what *ought*, according to it, to have happened to them in reference to the prevalence of disease; they have been comparatively free from those affections to which, upon theoretical grounds, they might have been expected to have been most liable. We might be inclined to attribute the increase now observed among them of bowel complaints and rheumatism to the circumstance that, with the setting in of fine weather, they adopted their own native mode of dress, one totally unadapted to this climate; but yet, attacks of fever, and of ordinary diseases of the chest, are as liable to be produced by cold, as are rheumatism and bowel complaints. Why, then, were they not similarly increased in their rate of occurrence?

The figures of the same returns show that no material difference has of late taken place in the ratio of occurrence of fevers among the British as compared with other months, even during the cold season. A temporary increase did indeed take place during the early part of this month, at which time the temperature of the air underwent a considerable increase. The cases of fever were then in some instances attended by a *roseolous*

rash. In other cases there was present cerebral congestion, attended by delirium, and in these, the eyes were generally more or less suffused; the pupil in some contracted, in others dilated. In all there existed a great tendency to relapse, and convalescence was slow. This form of fever did not, however, continue for any considerable length of time among the troops; and if we take the statistics of the whole month, a decrease in the admissions from this cause, as compared with those in March, is observable.

Another form of fever may be mentioned as occurring among our men. In it the pyrexia was not severe; but from the commencement of the attack, evident congestion of the lungs was present, interfering with the process of respiration. One fatal case of this form occurred, and in it the post-mortem examination revealed the existence of condensation of the pulmonary tissue, evidently of old standing. We may, therefore, presume that in other cases where the fever assumed the complication alluded to, there may have existed old disease in these organs, thus giving rise to a liability to a recurrence of it in an active form.

Pulmonic diseases, that is, those of an inflammatory as well as of a phthisical nature, have, during April, undergone a decrease. If we take phthisis alone, however, we find that its rate of prevalence has increased, and, indeed, that three cases of it have proved fatal. None of these can properly be considered as connected with the present period of the year; on the contrary, they all occurred in men who first had become seriously ill during the intensity of the cold weather, and ought, therefore, rather to be added to the already great mortality to which these months gave rise.

Bowel complaints have been somewhat less frequent than they had been in March. They have been more so than in February; thus we cannot safely attribute their rate of prevalence to anything connected with temperature of the present month; and the same remark may be extended to rheumatism and liver diseases. Our data are of too limited a nature, either as regards numbers of men or length of time, to justify conclusions being drawn from individual months—rather record mere facts, and trust to conclusions being hereafter elicited.

Among the deaths that occurred during the present month was one from tetanus. A young soldier had received a kick from a horse over the anterior spine of the tibia. The wound was small, not an inch in length, but it laid the bone bare. There was, however, nothing in its character to give rise to apprehension. Cold lotions were kept applied, and it looked clean. On the twelfth day of the injury the patient began to complain a little of stiffness in his jaw, which he attributed to his having caught cold from a draught of air to which he thought he had been exposed. The stiffness extended in the course of a couple of days to the muscles of the chest, then to those of the abdomen, assuming the character of spasms recurring at intervals.

The muscles of the loins now became attacked, more especially on the side corresponding with the wound. On inquiry being made, the patient asserted that he felt the tendency to spasm begin at the wound, and thence extend upwards, although it did not actually attack the limb itself. The wound in the mean time did not change in appearance, neither did it become more painful while the disease continued. The spasms were on no occasion of that violent nature which is said to be often the case in this terrible disease; they were short in period of duration, but rapid in their occurrence, thus depriving the patient of rest and sleep. For the first few days the bowels were obstinately constipated, afterwards they became moved by medicine, and were kept in a lax state.

All the remedies usually prescribed in tetanus were in turn administered, but without permanent good effect. Chloroform when inhaled gave temporary relief. Aconite did not appear to produce any effect. The regularity of the pulse was not at first affected. As the disease advanced, the spasms became increased in frequency, but less in severity. The features had from the first occurrence of the tetanic symptoms the stiff, anxious expression which usually attends the disease. It soon became evident that the vital powers were gradually giving way, notwithstanding that stimulants and rich soups were freely administered. After the disease had defied treatment during twelve days, a dose of croton oil and calomel was administered to the patient, on the principle that this method of treatment is beneficial in

cases of the apoplexy usually met with in India. The violent action produced by the combination seemed, however, to add to the debility of the patient, who thenceforward sank rapidly, and died in a more than ordinarily severe convulsion on the thirteenth day of the tetanus, and twenty-fifth of the injury. A very careful examination of the body took place, but no morbid appearance could be detected in the nerves of the injured limb, in the spinal cord, or in the brain.

The deaths in several instances occurred in men who were suffering from more diseases than one. This circumstance illustrates what has already been stated in regard to the great tendency men in China suffer from to become affected with one form of disease after another, and that without properly recovering from the one by which they may have in the first instance been prostrated. For instance, among those that illustrate what is now stated, were fatal cases of fever, complicated with excessive pulmonary congestion, diarrhœa with phthisis, and bronchitis complicated with hepatitis.

In the early portion of the month, a part of the force was moved into camp, with a view to increase the cubic space available for the men during the hot weather. A comparative series of statistics was established, with a view to indicate the prevalence among the men in camp, and those in the town, of various diseases to which soldiers are more especially liable.

The results of these statistics are given below. It must be mentioned, however, that the tents given to the men were not of the description that had been contemplated. Indian tents had been applied for, but instead of this description being given, "palls" were supplied.

The following includes the period from the 16th to the last day of the month, viz.:

Diseases.	In quarters. Strength, 1318. Admitted.	Died.	In camp. Strength, 509. Admitted.	Died.
Intermittent and rheumatic fevers	—	—	1	—
Continued fevers . . .	12	—	6	1
Pulmonic disease . . .	2	1	4	—
Bowel affections	5	—	3	—
Rheumatism	1	—	—	—
Venereal	11	—	15	—
Ophthalmia	2	—	1	—
Smallpox	—	—	—	—
Liver disease	—	—	—	—
Totals	33	1	30	1
Ratio of occurrence per 100 strength	2·60		5·40	

We find that the rate of prevalence of fevers and of venereal diseases was much higher in camp than in quarters; thus the ratio of occurrence of these, per cent., was as follows:

Fevers of all kinds, in quarters	0·91	In camp	1·37
Venereal diseases . . .	0·83	„	2·94

As in other instances, however, the period over which these observations extend is too short to justify any conclusions being drawn from it.

An examination of the table of mortality given above will show that, although during April the death-rate among the men was considerably higher than it had been during the previous month, yet that the majority of the diseases that then proved fatal had attacked their victims during the cold season; indeed, the unfortunate case of tetanus, one from delirium tremens—both diseases unconnected with climate—one of fever, and one of pneumonia, are all that actually commenced during the present month.

As regards the amount of sickness among officers, the admissions among those of each separate regiment are shown as under, viz.:

Regiment.	Strength.	Admitted.
Royal Engineers . . .	4	—
3rd Battery, 13th Royal Artillery	6	—
4th „ „ „ .	3	—
Military Train . . .	12	1
31st Regiment . . .	35	1
2nd Battalion, 60th Regiment .	26	—
67th Regiment . . .	30	5
Staff and Departments . .	25	1
Fane's Horse . . .	9	—
Total . . .	150	8

From this we learn that during the month of April the rate of sickness among officers was 5·33 per cent. of strength, or 63·96 per annum; thus they for the first time exhibit a higher state of health than the common soldiers. One officer was sent away on sick leave, he having been liable to repeated attacks of fever, and his health being generally impaired. With this exception, no severe case of disease occurred among the officers.

May, 1861.

The rate of admissions during this month was, among the British at Tein-tsin, 8·26 per cent. per mensem, or 99·12 per annum. Among the Seikhs, 10·03 per mensem, or 120·36 per annum. From these figures we learn, that as the heat of the season increases, the rate of illness among the Indian troops, instead of, as might be expected, being under that of the British, becomes greater.

We find, on making a comparison of the statistical tables for the present month with those of April, that among the British, the rate of occurrence of fevers has, as might have been expected, undergone an increase on the occurrence of hotter weather than we have as yet had since winter. It is, however, to be noted that a considerable part of this increase took place among the men occupying tents, as will be more particularly specified hereafter. A striking decrease took place in the

admissions from the other climatorial diseases, with the exception of rheumatism; and, contrary to what might have been looked for, that affection increased among the men.

Among the Seikhs, not only did fevers nearly double in their rate of prevalence as compared with the month of April, but these natives of India suffered in greater proportion from this class of diseases than the British did. Pulmonic disease did not appear among them at all. Stomach and bowel affections, although a trifle less numerous than they had been in the previous month, yet prevailed in a considerably larger proportion than among the British; while rheumatism became less frequent than in April, and was in proportion less prevalent than among the British.

It is considered that a comparison, such as has just been made of the rate of prevalence of particular diseases among the two classes of men constituting this force, and among the same class at different seasons of the year, forms in itself an interesting subject of inquiry. It moreover tends to illustrate what has already been hinted at, namely, that theory has been to the present time altogether at fault as regards the diseases and their prevalence which by it we might have been led to expect and not to expect. In fact, China, as regards its diseases, seems to be as different from what we have hitherto been accustomed to, as the country is socially, politically, and, indeed, in every other way from all that in these various respects are seen elsewhere.

On comparing the returns of the two classes of men, we find that during May the sickness was in proportion less among the British than among the Seikhs. This must, however, be taken with some degree of limitation, as we find that of the twenty-nine admissions among the latter, five were occasioned by venereal disease.

In the early part of the month, a certain number of invalids (seventy-one) were despatched to Hong Kong, with a view of being sent to England. These men had contracted the illness that incapacitated them during the cold season.

The following is an abstract of the diseases of these men, and of the numbers invalided on account of each, viz.:

Fevers, remittent	2	Amaurosis	1
Asthma	1	Amentia	1
Catarrh, chronic	2	Cephalalgia	1
Bronchitis	5	Paralysis	1
Pneumonia	1	Ophthalmia	4
Morbus cordis	1	Impetigo	1
Pericarditis	1	Rheumatism, chronic	8
Hepatitis	8	Synovitis	2
Diarrhœa	5	Contusio	1
Dysentery, chronic	18	Subluxatio	1
Dementia	1	Contractura	1
Anæmia	1	Deafness and Debility	1
Phthisis, pulmonary	2		
		Total	71

Thus we observe that the diseases of these men are precisely those by which the greater amount of sickness has been occasioned at this station up to the present time; we also observe that the proportion of men thus invalided is, as nearly as possible, 2 per cent. of strength during six months. This rate, and that of mortality hitherto shown, would give us as non-effective by disease during the year 8 per cent. of the whole. It is satisfactory to observe that the rate of mortality during this month, although still considerably above the average for England, was, nevertheless, considering the circumstances of the force, very moderate.

A letter from Hong Kong states that the deaths during the quarter ending April amounted only to 14 out of 3500 British; that would give 16 per 1000 strength per annum. Ours at Tein-tsin during the time that has elapsed since the force broke up in November, would give 71 per 1000 for the year. And our rate of invaliding 40 more, that is, more mortality than what is the rate at Berhampore (68·80), Chinsurah (68·40), or Calcutta (68·96).

During the months of February, March, and April, our rate of mortality, if calculated at the same rate for the year, would amount to 36 per 1000 per annum; so that in reality we have

been more than twice as unhealthy as the troops in south China during the same period.

The increased health of our troops during the present month, however, will materially diminish the rate for the whole year as above shown; yet it must be confessed that our statistics, even so far, show that our troops have suffered most severely.

We observe that the only disease that has occasioned a notable degree of mortality has been fever. The cases that proved fatal from this cause either did so from apparent cerebral complication, or from extensive disease implicating the glandular patches in the interior of the large intestine. The latter variety of the malady was further characterised by an eruption upon the surface of the body, having all the appearance of petechia, such as occurs in typhoid fever in Britain. The abdomen was at the same time tympanitic, the teeth covered with sordes, the tongue thickly coated at the sides, and red in the centre, presenting a streak there as if it were denuded of membrane; it was dry from root to tip.

In some cases of this disease, cold douche was employed, and with almost immediate relief, as, for instance, where the suffused eye and frontal headache indicated that the cerebrum was implicated. In other cases, sponging with cold water was found to be not only grateful to the patient, but also a valuable adjunct to the medicines administered. Some of the medical officers employed stimulants freely in the treatment of these diseases; claret was given in other cases, and with such encouraging results that this description of beverage became a great favorite, and was especially grateful to the patients.

A reference to the tables will show that, although fevers—that is, those not eruptive—have prevailed to a slighter degree among the British than during the month preceding, and to about the same extent only as they did in March, yet the rate of mortality on this account has not been quite so great as it was in April, but three times the amount in actual numbers that it was in March. This circumstance may therefore direct our attention to the fact that the increase in temperature of the weather has not materially been the cause of increase of sickness from febrile diseases; but that the rate of mortality from these is not necessarily increased in proportion to the liability of men

to become attacked; and the same remark has been made of various diseases that come under observation in India.

During a considerable part of the month, detachments of the force continued to occupy tents on the outside line of ramparts, as they had done the previous month; these tents, as has already been observed, were not well adapted for their purpose, and afforded their inmates but imperfect protection. The weather during the first half of April was characterised by dryness, and by the frequency of dust-storms, with a few trivial falls of rain. On the 23rd the amount of rain that had fallen during the two preceding days had converted the place where the tents stood into a swamp; the clothing and bedding of the men had become completely soaked, and accordingly the troops were immediately removed from their tents, and placed in public buildings hastily prepared for them in the town. This being the case, it is only possible to compare the rates of occurrence of the following diseases among the men in quarters and those under canvas for the twenty-three days the latter remained in camp, viz.:

	In Quarters Strength, 1493.		In Camp. Strength, 413.	
	Admitted.	Died.	Admitted.	Died.
Intermittent and remittent fevers . .	4	—	—	—
Continued fevers . .	22	1	5	1
Smallpox . . .	—	—	—	—
Pulmonic diseases . .	2	—	1	—
Hepatic „ . .	1	—	—	—
Bowel affections . .	10	—	2	—
Rheumatic „ . .	3	—	—	—
Venereal „ . .	29	—	10	—
Ophthalmia . . .	7	—	7	—
Other diseases . .	18	—	3	—
Total . .	96	1	28	1
Rate of occurrence per 100 strength . .	6·44		6·77	

In addition to the fatal case of continued fever, noted above as occurring in a man from barracks, a second death took place among this class a few days after the expiration of the period now being considered.

The above figures do not show that on this occasion the men who were in tents suffered beyond their comrades in quarters more than in an inconsiderable degree. We find the ratio of occurrence of fevers and venereal affections among the two classes of men to have been as under, viz.:

Fevers of all kinds in quarters 1·74 per cent.; in camp 1·21
Venereal diseases „ 1·94 „ „ 2·42

Thus we discover, contrary to what might have been looked for, that the rate of occurrence of fevers among the men in camp was not only smaller than it was in quarters, notwithstanding the increasing hot weather, and other disadvantages under which these soldiers laboured, but that it was actually smaller than it had been in the last half of April. We find, however, that venereal diseases were more prevalent among the men in camp than those in quarters, probably because the former were more apt to stroll away from their abode in search of occupation, or to kill *ennui*.

It now only remains to make a few remarks on the health of the officers during this month. Following, therefore, the method already adopted, the subjoined table represents the strength and sickness among those of each regiment separately, viz.:

Regiments.	Strength.	Admitted.
Royal Engineers . . .	3	—
3rd Battery, 13th Royal Artillery	6	—
4th „ „ .	2	—
Military Train . . .	13	4
31st Regiment . . .	30	3
2nd Battalion, 60th Rifles . .	25	2
67th Regiment . . .	30	2
Staff and Departments . .	25	1
Fane's Horse	9	—
	—	—
Total . . .	143	12

These figures give us a rate of admissions to strength of officers of 8·39 per cent. per mensem, or 100·68 per annum; that is, a little over what occurred among the soldiers. It must also be observed that one officer was sent on short leave in the command, on account of bad health, and two were despatched to Hong Kong, with a view to being sent on to England; thus, then, what has on previous occasions been remarked, as to the greater unhealthiness of the officers as a body than the men, is further illustrated in what took place during the by-gone month.

June, 1861.

The ratio of admissions during this month was, among the British, 13·20 per cent., or 158·40 per annum. Among the Seikhs 9·34 per cent., or 112·08 per annum. Eight deaths took place, all among the British, giving a rate of mortality of 2·77 per cent. per annum.

A considerable proportion of the admissions during the month were occasioned by venereal diseases. The subjoined table represents the admissions from this cause during each of the months that have elapsed since the formation of the army of occupation.

Admissions from Venereal Diseases among the British.

16th to 30th Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.
2	80	73	72	56	79	92	100

The great increase thus shown to have occurred in the occurrence of this class of diseases demands that a few observations should be made upon the subject. Prostitution, which in the neighbouring islands of Japan is a recognised institution, and under strict superintendence by the government, is in China, or at least in this part of the empire, under no control whatever. The moral code of the Chinese is in itself as high as that of any other country that can be named, and according to law the penalties for prostitution are of excessive severity. Unfortu-

nately, however, theory and practice in this respect are much at variance with one another. The Chinese authorities, when the unpleasant subject was mentioned to them of the existence of houses of this description, endeavoured to evade the matter by expressing the impossibility of such a state of matters taking place in China; nor was it until they were plainly informed of and questioned regarding the existence of some establishments still more objectionable in their nature, that they would entertain the subject at all. Once being got to talk about it, however, they discussed the subject in a practical enough manner, and the result has been that, at the end of the present month these houses were all shut up, their inmates sent out of the city, and orders given by the native magistrates, that any who might afterwards be discovered in the neighbourhood were to be at once handed over to them. It remains, therefore, to be seen what effects shall arise from this wholesale manner of dealing with the question, and it is principally with this view that the preceding table has been constructed.

We find that among the British during the present month the rate of prevalence of fevers has nearly doubled as compared with May. An immaterial increase has taken place on this occasion in chest affections; but it is in regard to bowel diseases that the most serious increase has taken place; the rate of these, per cent. of soldiers, having nearly trebled itself in June as compared with May. As regards rheumatism, there has been a trivial diminution, and of liver diseases a slight increase, but it is only in respect to fevers and bowel complaints that a really material difference in the rate of prevalence has taken place.

Among the Indian troops, there has been, as regards fevers, no material difference in the rate of prevalence as compared with May. Pulmonic diseases, which during the latter were entirely absent have now appeared to a trifling degree. Bowel complaints have doubled in frequency, and there has been a trifling increase in rheumatic diseases; liver affections continue entirely absent.

If now we compare the Seikhs with the British, we find that in regard to fevers, the latter have suffered more than the former. This might have been expected, considering the native climate

of the two races. Seikhs have suffered a little more from chest affections than the British, but not to a degree sufficient to demand particular notice. Bowel complaints have prevailed among both classes to an almost similar extent; rheumatism to a greater extent among the Seikhs than the British; and diseases of the liver have as heretofore been entirely absent from the Indians.

Reverting for a moment to the subject of venereal diseases, we find that the numbers admitted during this month were in the proportion, among the British, of 2·92 per cent. of strength; Seikhs 1·03; that is, the former have suffered within a very small fraction, as much from this result of their own vice as they have from bowel complaints, which form one of the most serious endemic diseases of a hot country. The Seikhs have suffered to a less degree, but it is to be feared that this fact of itself forms no criterion of their greater morality, but the very opposite. They are orientals, and orientals, including those of China, indulge in vices to which it is well not to allude farther.

It was remarked in the early portion of our residence at this station that, contemporaneous with the first considerable fall in the temperature, some cases of sudden death took place. In the month now gone, two men died with appalling rapidity, both from disease of the heart; and a third man succumbed a few hours after admission, he having, as shown by post-mortem appearances, had extensive inflammation of the gastric inner surface after fever. From these remarks further corroboration is given to an assertion already made, that similar effects, as regards disease, frequently arise from the operation of causes of an opposite nature.

The principal increase in sickness during June has taken place from cases of fevers and bowel complaints as compared with the cold months. Chest affections, which prevailed to a great extent during the continuance of intense dry, cold weather, are now only met with to an inconsiderable extent.

The statistics for the month show that again the Seikhs enjoyed comparative freedom from disease, and were altogether free from any of a lethal nature. It is no easy matter to explain the cause of this greater degree of healthiness enjoyed by them than the British, and also the greater degree of healthi-

ness enjoyed by them than by their brother Indians at Hong Kong.

In regard to the diseases that prevailed, several points of interest have to be observed; thus, we find that the progress of those by which mortality was occasioned was rapid; there was, however, in the general class, a marked difference as compared with India. Thus, with the exception of one case of fever, in which some of the symptoms of heat apoplexy were present, and in which relief followed the opening of the temporal artery, no case at all resembling that disease as met with in India occurred among the soldiers.

There were apparently few cases of intermittent fevers, and in no instance among the men did we observe severe spleen complications such as we meet with in India. Instead of this, men affected with ague began to assume the peculiar blanched and anæmic hue which renders some residents at Hong Kong, and especially on the southern part of that island at once distinguishable.

Even in the instance of the bowel affections there was a marked difference between the characters of those that occurred at Tein-tsin and those that had been previously observed in India. In the former, the symptoms were, as a general rule, less urgent in their characters. They partook, in their early stages, more of diarrhœa than was the case in India. The symptoms of dysentery were less severe than in that country, but in fatal cases, post-mortem examination discovered sphacelus, deep ulceration and other disorganization of the cæcum and rectum, similar to what are observed in the worst forms of the disease as met with in Bengal.

It was remarked that recovery from severe attacks of illness became more and more tedious as the month advanced, this being doubtless one result of the high temperature that prevailed; consequently, the hospital became rapidly filled and additional accommodation became necessary for the increasing numbers of sick.

Of the cases of fever, one was remarkable on account of the extreme depression of the vital powers under which the patient suffered. He had been at best but a weakly man, and when seized with the attack of continued fever, he speedily fell into

a state of exhaustion from which it was not easy by means of stimulants to rouse him. After the crisis of the disease had passed, it was discovered that his right foot and lower part of the leg were livid, and that sensation in them was much impaired. Shortly afterwards, phlyctenæ appeared upon the latter, the toes became dry, shrivelled, and black. It was evident that extensive gangrene had taken place. After some days, the strength having been supported, a line of demarcation began to form below the knee, running irregularly across the knee.

Amputation was accordingly performed in the lower third of the thigh, chloroform being first administered. During the operation, the flaps remained as cut, not showing the contractility that flaps usually do; the muscular fibre was moreover found to be of a dark and unhealthy colour. Contrary to anticipation, not only did he bear up under the operation, but he gained strength afterwards. It was found, however, that no attempt at union took place between the flaps; consequently, when, after a time the threads ulcerated through, the head of the bone was found to be uncovered. The ligature came from the femoral on the thirteenth day. Bed sores, however, commenced, and in this state the man was at the end of the period included in this report.

It is presumed that these remarks will illustrate the general type of disease that prevails here during this period of the year; and it may be added, that although the rate of sickness has undoubtedly been high, that of mortality has been by no means so, when all circumstances are considered.

Among these circumstances of position are: a crowded city, surrounded by high walls; narrow streets, reeking with filth of the most odious nature; a succession of low, narrow, badly built houses, of one storey high; floors consisting of no better materials than inferior bricks, and these placed so loosely that the damp and sickening odours from the earth escape freely through the crevices between them, are circumstances that, upon the scale they exist in Tein-tsin, do not admit of being altered to the extent dictated by sanitary considerations. Unfortunately, they are those most likely to occasion precisely the class of diseases that have increased most during the present portion of the hot weather; and the circumstances which render necessary the tem-

porary location of a force here obliges us also to occupy the description of places that have been handed over for the use of the troops.

The fact of men and officers occupying rooms on ground floors no doubt has operated perniciously upon their general sanitary condition. It is so even at home, and in China is notoriously the case. Fevers and bowel complaints are therefore in some degree, no doubt, attributable to this cause, but the evil as it affects our present force cannot be avoided while it retains its character as an army of occupation.

In regard to the officers, we shall find that they do not show that great ratio of health which, from their freedom from the discomforts and fatigues of life incident to a common soldier, they might be expected to show.

The subjoined table is intended to represent the strength and sickness among those of each regiment during the month, namely :

Regiments.	Strength.	Admitted.
Royal Engineers . . .	4	—
3rd Battery, 13th Royal Artillery	6	1
4th „ „ .	3	1
Military Train . . .	13	3
31st Regiment . . .	31	10
2nd Battalion, 60th Regiment .	25	3
67th Regiment . . .	31	2
Staff and Departments . .	25	2
Fane's Horse . . .	8	—
	—	—
	146	22

The ratio thus given of sickness among officers, per cent. of strength, is 15·06 per mensem, or 180·72 per annum. It will be remembered that among the common soldiers there were respectively 13·20, and 158·40; and among the Seikhs 9·34, and 112·08. We thus perceive that sickness has actually prevailed among the officers to a very much greater extent than it has done among the men; nor have their diseases been by any means milder than they have among the soldiers, but quite the contrary; and although none have actually died, still two have

had to be sent away upon sick certificate. It is somewhat strange that the principal amount of sickness among the officers should have fallen upon those of one regiment, and that not by any means the one in which the greatest amount of illness was observed among the men.

July, 1861.

During this month the rate of sickness among our men attained a degree to which it had not hitherto reached. Among the British the admissions were 17·51 per cent. of strength, or 210·12 per annum. Among the Seikhs only 10·41 per cent., or in the proportion of 124·82 per annum.

In continuation of the remarks already made in regard to prostitution and the prevalence of venereal diseases, it may be observed in this place that, in accordance to orders, the houses of ill fame were shut up so soon as the amount of illness attributable to these places had reached the amount there stated. Notwithstanding this somewhat sweeping measure, however, and that the houses have been carefully watched by the police, the soldiers find means of becoming infected. The evil has therefore not been quite eradicated, but it has been checked in some measure. Instead of 100 admissions from this cause, as occurred in June, they have, during this month, fallen to 59; thus, therefore, the benefit of the measure has already become apparent.

A reference to the numerical returns of climatorial diseases during the present month, will show that fevers have nearly doubled themselves among the British, but have among the Seikhs decreased by one half. Pulmonic affections have among the former somewhat increased, but are altogether absent from the returns of the latter. Diarrhœa and dysentery have increased to a degree that is alarming among the British, and to a smaller degree among the Seikhs. Rheumatic diseases do not show any difference worth mentioning, in the ratio of occurrence as compared with the preceding month.

Liver diseases have become more prevalent than they were among both British and natives, but the increase is principally occasioned by attacks of icterus; for of the fourteen cases

hepatic disorders returned as occurring among the British, eight were icterus; and the two cases among the Seikhs referred to this class were from jaundice also.

Although, however, cases of inflammation of the liver are comparatively rare in an idiopathic form in this part of China, this form of disease is in reality of very frequent occurrence, and has been especially so during the hot season. In the great majority of fatal cases of dysentery, post-mortem examination reveals more or less numerous and extensive hepatic abscesses; these are in most instances deep in the substance of the liver, have not been attended during the life of the patient by any definite symptoms, and, in fact, were not at first even suspected, until their frequent discovery after death drew attention to the circumstance.

In many cases the gradual degeneration of the hepatic tissue into pus has been observed at different stages of the process, from the first period—where the tendency appears in the form of a circumscribed, pale gray spot, somewhat softened, in the parenchyma of the organ—to its complete stage of development, where deposits of pus, in the form of abscesses, appear, as just mentioned.

The actual amount of illness among the British troops, as represented by the numbers constantly sick, has been very great; thus we find that although sixty-eight men were sent from hospital to Taku, and three more weakly men from barracks between the 20th and last day of the month; still the average daily numbers in hospital, as shown by the statistics, would give for British 304; and in addition to these, an average number of 30 have been daily excused duty on account of indisposition; while among the Seikhs there has been an average daily number of 13 sick, and 2 additional excused duty. These numbers accordingly give us for the British, daily sick, 8·52 per cent.; daily excused duty, but not in hospital, 0·84 per cent.; total unfit for duty on account of illness, 9·36 per cent. per diem throughout the month; these numbers being exclusive of the men already mentioned as having been sent to Taku for the benefit of change. In like manner we shall find the rates per cent. among the Seikhs to have been—in hospital daily, 4·51; excused duty, 0·68; total non-effective daily, 5·19.

Thus the greater degree of health enjoyed by the black troops than by our own countrymen becomes very apparent. A consideration of the daily admissions during July show that, as the mean temperature of the atmosphere, the admissions from fevers and bowel diseases took first one start upwards, then another, and then a third. It is to be remarked that the general state of the atmosphere during this month has been considerably more moist than the preceding, and that the mean temperature has been higher. We also observe that with the continuance of these conditions, and more especially with their increase from time to time, a great increase was apparent in the occurrence of disorders of the bowels. Dysentery and diarrhœa were usually the forms in which these manifested themselves, but in some instances these were attended by distinct choleraic symptoms; and in a few instances death took place from sporadic attacks of disease having all the characters of the cholera of India.

In some other cases, however, soldiers became attacked with vomiting, purging of rice-water, spasms, and collapse; the voice did not acquire the peculiar character so distinctive in India, but remained strong. Yet death in two or three such cases occurred; and it was found that the subjects of this form of disease had previously suffered from illness, had been discharged from hospital, but, although in barracks, and performing their duty, had remained out of health. Post-mortem examination in these revealed the fact of extensive ulceration and reddening of the lining membrane of the stomach; the lesions in one case being so extensive, that it was matter of surprise how the person could have so long survived.

These choleraic attacks were not confined to the British; they were also observed among the Seikhs, one of whom died from this cause. Nor were the natives themselves exempt from them. On the contrary, several deaths occurred among the Chinese from this cause; and, although cholera does not seem to have occurred here in an epidemic form, occasional cases of it are known to happen every hot weather, as they have done this year, and on each occasion to destroy a few lives.

A remarkable illustration took place during this month of the extent to which sickness and mortality prevailed among the men who had passed the winter and early part of the summer

here, and among those who had been quartered in huts or tents in the neighbourhood of Hong Kong for some months, and had their sanitary condition lowered thereby.

A detachment of recruits and men for the 2nd battalion of the 60th, which was unable to land at Taku in the early part of last winter, had to return to Hong Kong, where it was put up as now described. There the men suffered considerably from the endemic diseases of the place, and when, in June, the detachment sailed for the north of China, a large proportion of them were actually unfit for duty. It was considered, however, that the healthy climate of this part of China would set them up, and they were accordingly sent, as if to a sanitarium.

Between the 12th and 17th of July the detachment, consisting of 249 men, joined head-quarters, and the following statistics will show to what extent, as compared with the 649 which then formed the head-quarters of the regiment, they became the subjects of disease; taking the comparison from the part of the month subsequent to the arrival of the drafts, both as regards themselves, and as regards the original men.

From the 17th to the 31st of the month, there were admitted, from among the men originally at head-quarters, 9·08 per cent.; from among those newly joined, 30·13 per cent. Three died during the same short period; a proportion to strength of 0·61 per cent. of the former, and of 2·00 of the latter. We thus see that the new arrivals have suffered to an alarming extent.

Fevers and bowel complaints have been the diseases that prevailed during this month to the greatest extent, while they and insolation have been the principal causes of mortality. The following abstract shows the relative degree of prevalence and mortality from each of these among the original men at head-quarters of the 60th Regiment, and among the men who joined during July, viz.:

	Head-quarter Men.		Men of Drafts.	
	Admissions per cent. of strength.	Deaths per cent.	Admissions per cent. of strength.	Deaths per cent.
Fevers . .	2·24	0·15	16·06	0·00
Bowel diseases .	4·31	0·30	11·64	1·20
Insolation .	0·61	0·15	3·61	0·80

From these figures we learn that soldiers arriving here from the south of China are not only more liable to become attacked by disease, but are more liable to a high rate of mortality than those who may have been stationed for some little time in the place. This fact may be looked upon as confirmatory of an opinion already expressed by me in regard to this point, as it bore upon the 67th Regiment, the men of which, having been stationed at Canton, where they had suffered severely from sickness, were, while in a low sanitary condition, sent to the north on service, and while yet in a state little fitted to enable them to resist the effects of fatigue and exposure incidental to a campaign.

The mortality among the force, especially the British portion of it, has been very great. Its amount is represented in the tabular form; but before offering further remarks regarding it, a brief notice may be taken of the history of the case in which amputation was performed during last month. In it, the vitality of the patient had been so greatly reduced that it was scarcely expected that he would have survived the shock of the operation. He did bear up, however; but a few days afterwards the fact became apparent that no attempt at union had taken place; the ligatures made their way by ulceration through the flaps, and, on the supports being completely removed from the stump, the flaps fell apart, leaving the bone bare and projecting. Diarrhœa, from which the patient had for some time previous suffered, increased in severity; bed-sores formed over the hips. He gradually sank and died from debility.

An examination of the ages of men who, during this month, were seized with insolation, indicates the fact that those of all ages were equally liable to become attacked by the disease. Of those who lost their lives from this cause, one was only twenty years of age, and in his case the progress of the attack was so rapid, that he died before he could be brought to hospital from barracks. Three men of twenty-one years of age were among its victims, and of those who were more advanced in life were two of thirty-four years of age, one of thirty-six, one of forty, and one of forty-three. Of the whole number attacked, the majority were young soldiers; several of these were at the time under treatment in hospital, on account of

other diseases, and, upon the whole, we have, on this occasion, no grounds for believing that the subjects of this disease were chiefly the dissipated and intemperate.

The treatment pursued was the same as is most successful in the disease as met with in India; and the success which has attended it at Tein-tsin has, unquestionably, been very great. The advantages of cold affusion became so apparent, that soldiers in barracks adopted it towards their comrades when first seized with the symptoms of the disease, and the remedy thus early applied saved several lives that must have been lost had nothing been done for them until after their arrival at the hospital.

The first occurrence of the disease took place on the 17th of the month, and it continued to prevail during the seven following days, the temperature at this time being very high. During this week there occurred fifty-six cases among the men; of these, fifteen died, six were discharged cured, and thirty-five remained under treatment; one officer of the 67th regiment became attacked with the disease, but he speedily recovered; one other officer of the same regiment, who was suffering from a severe sporadic attack of small-pox, died on 21st of the month, with symptoms of insolation. The following table represents the number of cases that occurred in the different regiments, viz.—

Regiment.	Admitted.	Died.	Discharged well.	Remain.	
3rd Battery, 13th Royal Artillery	1	1	—	—	This case under treatment for feb. c. c.
4th Battery, 13th Royal Artillery	1	—	—	1	
Royal Engineers	—	—	—	—	
Military Train	4	2	—	2	
31st Regiment	11	4	1	6	
2nd Bat., 60th Rifles	22	3	2	17	One case under treatment for feb. int.; three for feb. c. c.; some for dysentery.
67th Regiment	15	3	3	9	One case under treatment for feb. c. c.
A. H. C.	2	2	—	—	
C. S. C.	—	—	—	—	
Fane's Horse	—	—	—	—	
Total	56	15	6	35	

Not only was the mortality great from this cause, but cases of diseases of other forms were more than usually fatal during these few days. The bearing upon the atmospheric conditions prevalent at the time will be rendered apparent from the following:

Date of July.	Thermometer.		Humidity at 9 a.m.	Hygrometer.		Ozone.		Wind at 3 p.m.	Sky at 3 p.m.	Thermometer attached to Barometer, 3 p.m.	Barometer, 3 p.m.	Fatal diseases.						Remarks.
	Maximum.	Minimum.		Dry bulb at 3 p.m.	Wet bulb at 3 p.m.	9 a.m.	9 p.m.					Insolation.	Dysentery, acute.	Diarrhœa.	Feb. c. c.	Cholera.	Total.	
17	95·	73·5	64	90·	80·	2	1	N.	Clear	89·	29·65	—	2	—	—	—	2	
18	104·	77·	53	101·	80·	—	—	S.W.	do.	91·5	29·73	1	—	—	1	—	2	
19	105·	80·	53	101·	83·	1	—	S.W.	do.	92·	29·78	1	1	1	—	1	4	
20	108·	82·	53	101·	78·	—	—	S.W.	do.	92·	29·80	1	—	—	1	—	2	
21	107·	83·	45	102·	80·	1	—	W.	do.	95·	29·79	5	—	—	1	1	7	A slight shower at 5·30 p.m.
22	108·	82·	54	102·5	78·	—	—	S.W.	do.	94·	29·79	6	—	—	—	—	6	
23	105·	81·5	43	102·5	78·5	1	—	S.W.	do.	95·	29·60	1	—	—	—	—	1	
												15	3	1	3	2	24	

The occurrence of sickness among the officers during the month has been as follows, viz. :

Regiment.	Strength.	Admitted.	Died.
Royal Engineers	3	—	—
3rd Battery, 13th Royal Artillery .	3	—	—
4th „ „ „ .	7	1	1
Military Train	13	4	—
31st Regiment	31	8	—
2nd Battalion, 60th Rifles . .	28	5	—
67th Regiment	29	5	1
Staff and Departments . . .	24	3	—
Fane's Horse	9	—	—
Total	147	26	2

The above would give the rate of admission per cent. of officers during July as 17·68, or at the annual rate of 212·16 per 100. The death of two during the month give for that period the ratio of mortality of 1·36, or 16·32 per annum—a rate which cannot be considered as other than very high.

One of the officers died from insolation occurring during his illness from smallpox, as already mentioned; the other was attacked at Taku with symptoms of low fever, under which he rapidly sank. He was a young lad of the Artillery, who had come up from Hong Kong with the drafts, and who almost immediately on his arrival was seized with his fatal illness. Six officers were sent away from Tein-tsin during the month on sick-leave; so that, upon the whole, they as a body suffered quite as severely in health, if not more so, than the common soldiers.

August, 1861.

The rate of admissions during this month was among the British 13·85 per cent. of strength, or 166·20 per annum; among the Seikhs 10 per cent., or 120 per annum. The prevalence of venereal diseases continued still further to diminish in consequence of the decided measures lately taken in regard to their source; that these measures, however, stringent as they were, have not fully attained their object, is apparent from the

fact that forty-seven admissions on this account have taken place during the present month.

As regards the diseases ordinarily attributable to climatorial causes, we find that during the present month fevers have diminished among the British, as compared with the preceding month; among the Seikhs, however, there has been a considerable increase in the number admitted on this account. It is to be observed, however, that the degree of severity of attacks had undergone a decrease. Pulmonic diseases have increased somewhat in actual number that occurred among the British, and considerably so in the obstinacy of attacks. This increase is accounted for by the fact of tuberculous disease having attacked a few of the people in question. The Seikhs continue to enjoy a remarkable immunity from pulmonic diseases as compared with the British.

Diseases of the stomach and bowels exhibit in their rate of occurrence among the British some points of great interest. In order to bring these particulars more prominently forward, it is well to recapitulate the following particulars :—In July, the rate of admissions from this class of diseases was 7·32 per cent.; in August, 5·42; in the former month, the average daily number actually sick was 108·03; in the present month it had risen to 131·29. It is thus made clear that the proportion of obstinate cases of this class of diseases in hospital increased very considerably during August. This was, indeed, apparent in the wards, many patients who during July had become affected continuing under treatment throughout the present month, and their original diseases becoming complicated in various ways, most frequently with hepatic affection.

Among the Seikhs we find that while the rate of admission in July had been 3·47, and the average daily number in hospital 2·09; the admissions for bowel affections were, in August, 1·73 per cent.; the average daily number in hospital, 2·41. We thus perceive that the frequency of attacks has diminished, but the degree of the severity has increased during the present month.

I have on previous occasions had practical experience of the occurrence of diseases of the alimentary canal in localities in which decomposing animal matter abound. A remarkable illustration of this occurred on board a vessel on the homeward

voyage from India. A large amount of decomposing animal matter had become soaked with bilge-water; maggots bred in amazing numbers; the effluvia pervaded the vessel to a degree sufficient to change the colour of all the panels painted with white lead. Fever, diarrhœa, and phlegmonous boils occurred among the passengers, few of whom escaped having one or other, or all these complaints. Somewhat similar circumstances have taken place during the past two months at this station. The intense heat of the climate has brought about the maximum degree of decomposition in the huge masses of animal refuse that lie about in various directions in and about Tein-tsin, and bowel diseases have attained their maximum, the number of them in hospital having on several occasions actually amounted to one third of the entire sick.

Three cases of cholera are recorded as having occurred among the men of the 60th Rifles; of these, two were fatal, yet the attacks as seen differed in several respects from those met with in India. The voice has not, in any of the cases that have come under notice at Tein-tsin, possessed that hollow character which it invariably has in similar cases in India. In one of the two fatal cases of the disease, however, the post-mortem appearances assimilated in a great measure to those found after death in cases of cholera in India, tænia, however, being discovered in the intestines. In the second fatal case, the only abnormal conditions found after death seem to have been a degree of increased arterial congestion on the meninges, and greater than ordinary serous effusion within the ventricles of the brain. Rheumatism still occurs in an inconsiderable degree among the British, and during the past month in even a lesser degree than happened during July among the Seikhs; while the aggregate treated is precisely the same as in July, the proportions of admissions is nearly double what it was in that month; hence it is evident that a decrease has taken place in the severity of the cases.

In regard to liver diseases, the numerical returns do not give a correct impression of their rate of prevalence, for the reason already mentioned, namely, that although in a primary form they are by no means common, yet as complications in cases of dysentery, and in some cases of fever, they are very prevalent,

disorganization taking place in an insidious manner, as previously described. In some of the cases of this nature, even after the attention of medical officers had become aroused to their occurrence, no symptom was detected calculated to indicate that disorganization was in progress, until in some instances the presence of matter in the veins had become apparent by swelling of the side, and in other instances not until it was revealed by post-mortem examination.

Of the twenty-four cases of diseases borne upon the returns as referable to this organ, no fewer than twenty were those of icterus. The great degree of prevalence of that form of disease must therefore be looked upon as remarkable. In some instances it was accompanied by pain in the region of the organ, but in others it was accompanied by none. As regards the numbers daily non-effective during the month, we find that they amounted per cent. among the British to 8·64 per cent. actually in hospital, and 0·98 excused duty, that is, a total of 9·62. Among the Seikhs, the numbers were respectively 5·90 and 0·69, giving a total of 6·59. From these figures, therefore, we have further information of what has been already remarked in reference to the greater degree of severity of cases treated during August than in July; inasmuch as while the admissions among the British amounted in the latter to 17·51 per mensem, and in the former to 13·85, the average daily non-effective was in July, 9·36, and in August, 9·62, as just stated; among the Seikhs, no material difference took place.

By a comparative view, now given in Dr. Nicholson's monthly return of the 2nd battalion 60th Rifles, it appears that during August, out of a strength of the draft lately arrived from Hong Kong, amounting to 240, there were admitted 91, or a ratio per cent. per month of 37·91; giving the annual ratio of 454·92 per 100. The deaths were 6, giving the monthly ratio per cent. of 2·5; or for the year 30. The strength during the same period of the old soldiers was 638, of this number there were admitted 42; viz. a monthly ratio per cent. of 6·58, or annually, 78·96. There died 5, giving for the month a rate of mortality of 0·78 per cent., or 9·36 per annum. These figures accordingly show, even in a more striking manner

than the returns of the previous month, how much greater were the sickness and mortality among the late arrivals than among the men who had been at the station for some time.

The following table represents the sickness and deaths among the two classes, from the principal diseases that have prevailed, viz.:

	Head-quarter Men.		Men of Drafts.	
	Admissions per cent. of strength.	Deaths per cent.	Admissions per cent. of strength.	Deaths per cent.
Fevers . .	1·41	0·15	16·66	0·00
Bowel diseases .	2·35	0·62	14·58	1·66
Insolation. .	0·00	0·00	0·83	0·83

These figures show us a liability among the newly arrived to become attacked with fever and bowel diseases, as compared with the older residents, that is out of all proportion beyond what could have been anticipated. This circumstance, therefore, adds confirmation to what has already been stated in regard to the disadvantages under which men labour, who, having been the subjects of illness in the south of China, are sent to the north during the hot season, in the hope of being benefited by the change.

During the severity of sickness in July a stop was put to every duty among the troops that could be avoided; early in August, however, musketry instruction was resumed, but with this exception, the duties which the men were called upon to perform were of the lightest possible nature. In consequence, however, of the extended and straggling nature of the buildings in which our men were distributed, thus requiring that a large proportion should be daily on guard, the men had only the number of nights in bed consecutively that are noted, viz.: Royal Engineers 17, Royal Artillery 7, Military Train and infantry regiments 5 each, so that in reality the duties were still as arduous as they usually are in garrison towns in the United Kingdom.

We find that among the officers during this month, the sickness was as follows, viz.:

Regiment.	Strength.	Admitted.	Died.	On sick leave.
Royal Engineers . .	3	—	—	—
3rd Battery, 13th Royal Artillery	7	—	—	—
4th do. do.	4	—	—	—
Military Train . .	14	2	—	—
31st Regiment . .	29	6	—	1
2nd Battalion, 60th Rifles	28	2	—	—
67th Regiment . .	29	10	—	—
Staff and Departments .	25	2	—	—
Fane's Horse . . .	6	—	—	1
Total . . .	149	23	—	2

These numbers give the rate of admission among officers at 15·44 per cent. per month, or 185·28 per annum; that is, considerably more than the rate observed among either British or Indian soldiers; and yet it is evident that cases of sickness are not fully returned in Fane's horse, from the fact that one of the officers is known to have proceeded on sick-leave during the month, and yet no officer appears by the returns to have been ill.

September, 1861.

In the present month, the rate of admissions among the British portion of our troops, was 9·78 per cent., or 117·36 per annum; among the Seikhs, 5·03, or 60·36 per annum.

A slight increase in the number of venereal cases has been observed, there having occurred fifty this month, instead of forty-seven last month among the British. This circumstance shows that the soldiers have means of eluding the vigilance of the police, and of defeating in some degree the measures that have been taken with a view to decrease, as far as possible, this class of diseases.

It is advisable to remark, with reference to the statistics of the Royal Engineers during the present month as compared with August, that the amount of sickness now shown has occurred among a body of men who have but recently arrived

from the south of China to relieve an equal number who have proceeded thither.

The figured statements show that a very considerable decrease in the amount of sickness has occurred this month contemporaneously with the fall in temperature of the atmosphere. The extra establishments that had, during our greatest degree of sickness been fitted up temporarily as hospitals, now ceased to be required.

In a considerable number of our cases under treatment recovery took place; in a greater number, however, the vital powers did not rally quickly after severe illness; the death-rate still continued high, although the fatal cases were principally of diseases that had occurred during the intense heat of preceding months.

The Seikhs have still enjoyed a greater immunity from climatorial diseases than the British. As regards liver diseases, a very trifling increase is shown among the former than among the latter, but this arises from the smallness of the number of Seikhs who furnish the statistics.

Among the British, climatorial diseases have decreased in numbers; the tendency to the formation of pus in the liver, to which allusion has already been made, continues unabated. Several cases of this nature have occurred in a very insidious manner, and when they did occur, the result was, in a large proportion of them, fatal.

As regards the daily proportion per cent. of men non-effective through sickness during this month, we find there were, among the British, 7·89 per cent. actually in hospital; 0·65 excused duty for medical reasons, making a total of 8·54 per cent. per day. Among the black troops the proportions were respectively 3·77 and 0·62, making a total of 4·39.

We observe from these figures that the native Indian troops still maintain their superiority as regards health over the British; and the circumstance is also made apparent that a very considerable diminution in the amount of sickness has occurred among the whole of the troops, attributable, we may safely presume, to the moderate and agreeable climate that prevailed in September.

Continuing the analysis of the rates of sickness among the

old soldiers of the 60th Rifles, and those lately arrived, we find for this month, that of the latter the strength for September given was 235; of these there were admitted 38; that is, a ratio per month of 16·16 per cent. of strength, or, for the year, of 193·92 per cent. There was only one fatal case; thus giving a death-rate per cent. per month of 0·42, and for the year, of 5·04. Of a strength of old soldiers amounting to 641, the admissions recorded during September were 33, giving a per-centage for the month of 5·14, and for the year of 61·68. One death occurred, thus representing a rate of mortality per month of 0·15, and for the year 1·80.

We thus see, that although the new arrivals still continued to suffer very considerably more than the old soldiers, both as regards their liability to illness, and in respect to the death-rate among them yet, they have gained very considerably as regards both since the preceding month; thus showing the benefit obtained by them from the occurrence of more moderate temperature.

The comparative rates of sickness among the men who have been at Tein-tsin throughout the winter and summer, and those who have lately arrived, at least, in so far as some of the most important diseases are concerned, are represented below, viz.:

	Head-quarter Men.		Men of Drafts.	
	Admissions per cent. of strength.	Deaths per cent.	Admissions per cent. of strength.	Deaths per cent.
Fevers . .	0·90	0·00	5·52	0·42
Bowel diseases .	2·02	0·15	6·80	0·00
Insolation . .	none.		none.	

This table indicates that, as compared with other months, the proportional decrease in climatorial diseases has been far more considerable among the drafts lately arrived than among those longer resident in the north of China. The improvement in the sanitary condition of the force generally since August, and more especially since July, is very evident.

One of the fatal cases of fever was complicated with dysentery, and the cases noted under the head of diarrhœa had all become more or less severely complicated with ulceration and extensive

degeneration of the substance of the intestines. In fact, as in the previous month, so now, dysentery was the chief disease by which mortality was occasioned, and hepatic abscess continued to be an almost invariable attendant in these cases, suppuration sometimes taking place to an enormous extent without the presence of any symptom of inflammation.

It might readily be imagined that the occurrence of hepatic abscesses in the above cases arose from the simple process of puriform deposition taking place in the organ; absorption having, in the first instance, taken place from the ulcerated bowel itself. This supposition, however, is purely theoretical, and does not account for the fact observable in post-mortem examinations that degeneration of the hepatic tissue was seen in various stages of advancement in other fatal cases than those of bowel diseases. We may, therefore, presume that the deposit of pus in the liver is a process directly attributable to certain endemic influences, the operation of which affect the troops in this part of China.

The occurrence of cases of insolation had now completely ceased; cholera, however, had not quite disappeared, although neither in the previous months nor now did this formidable disease manifest any indication of becoming epidemic.

In addition to the men who died during September, a considerable number became non-effective on account of attacks of illness rendering it necessary that they should be invalided. The numbers of men who had thus to be sent away in order that they might avoid exposure to the intense cold of the succeeding winter, amounted, among the numbers borne upon the returns of Tein-tsin, to 96. Five more were sent from Taku, making a total from both portions of the force of 101.

Among the officers, the sickness during the month has been as under, viz.:

Regiment.	Strength.	Admitted.	Died.	On sick leave.
Royal Engineers . .	4	—	—	—
3rd Battery 13th Royal Artillery .	8	—	—	—
4th do. do. .	3	1	—	1
Military Train . .	14	1	—	—
31st Regiment . .	30	3	—	—
2nd Battalion, 60th Rifles	27	1	—	—
67th Regiment . .	28	5	—	—
Staff and Departments .	26	2	—	3
Fane's Horse . . .	11	—	—	—
Total . . .	151	13	—	4

These numbers give the rate of admissions for the month among the officers as 8·60 per cent., or for the year, 103·20. No deaths took place among them; but the character of the cases generally among the officers was severe, no fewer than four being sent away invalided, and of these four, three very seriously affected, one with dysentery, the other two with hepatic disease. The numerical return shows, however, that the actual rate of sickness has, during the present month, been smaller among British officers than it has been among the soldiers.

In concluding these remarks, I must observe, that of the 101 invalids who were, during the present month, sent away, 5 died before embarkation; their deaths must therefore be added to the already high rate of mortality shown by the returns.

I have it in my power to add the following brief particulars regarding the medical statistics of October and November, 1861, they having been obtained from tables kindly forwarded to me by Drs. Binden and Lamprey, viz.:

October.

We learn from the tables sent home, that the ratio of occurrence of fevers this month was almost identical with that of September. Pulmonic diseases, strangely enough, decreased to a great degree; a trivial decrease also took place from diseases of the stomach and bowels; there were not quite so large a

proportion of admissions on account of rheumatism, but liver diseases were somewhat more numerous.

The diseases by which death was occasioned are not now ascertainable, but the ratio of mortality decreased very much, going down to 2·41 per annum.

It is to be observed that all the Seikh troops left the station at the commencement of the month, consequently the statistics for this and the succeeding include only the British.

November.

From the same source we learn that during this month a still further decrease took place in the rate of occurrence of fevers. Pulmonic diseases, as might be expected, increased very considerably. Bowel complaints and liver diseases decreased, and the ratio of cases of rheumatism remained much as it had been during October.

As regards mortality, it decreased to a degree that would not be deemed considerable for a home climate.

From the records from which these statistics have been extracted, I deduce the following succession of unhealthiness, according to months, placing the most healthy one at the top of the list, the most fatal one at the bottom, and premising that the mean of the mortality for November, 1860, and 1861, is given for that month, viz.:

Month.	Annual ratio of mortality.
May	2·04
November	2·10
February	2·40
October	2·41
June	2·77
March	3·12
December	5·16
April	5·64
August, September } equal	6·48
January	7·80
July	12·36

The following table shows the rates of admission on account of climatorial diseases, among the British and native Indian troops stationed at Tein-tsin and Taku, in 1860-61:

		Fevers.	Pulmonic.	Stomach and Bowels.	Rheumatism.	Liver.
November ...	British...	No information.				
	Seikhs ...					
December ...	British...	0·72	0·56	1·44	0·18	0·05
	Seikhs . .	1·02	0·46	1·02	0·54	0·00
January	British...	1·50	4·06	2·07	0·54	0·36
	Seikhs ...	3·08	3·08	0·68	1·02	0·00
February.....	British...	1·20	2·85	1·23	0·54	0·23
	Seikhs ...	1·71	0·34	1·03	1·03	0·00
March	British...	1·62	1·09	1·48	0·50	1·53
	Seikhs ...	1·72	0·34	0·68	0·34	0·00
April	British...	1·25	0·94	1·28	0·29	0·35
	Seikhs ...	0·68	0·34	1·73	0·68	0·00
May.....	British...	1·52	0·20	0·96	0·43	0·17
	Seikhs ...	2·07	0·00	1·38	0·34	0·00
June	British...	3·36	0·24	2·98	0·35	0·24
	Seikhs ...	2·06	0·34	2·42	0·68	0·00
July.....	British...	5·73	0·35	7·22	0·38	0·41
	Seikhs ...	1·39	0·00	3·47	0·34	0·69
August.....	British...	3·71	0·40	5·42	0·27	0·65
	Seikhs ...	2·03	0·33	1·73	0·67	0·00
September ...	British...	1·74	0·32	3·31	0·40	0·27
	Seikhs ...	0·94	0·00	0·62	0·00	0·31
The following are obtained from Dr. Lamprey:						
October	British...	0·75	0·15	3·06	0·34	0·55
November ...	„	0·55	1·31	2·06	0·35	0·20

In the following tables, showing, among other matters, the prevalence of what are called "zymotic" diseases, I do not include all those usually noted under this head; these, according to the opinions of some, would include nearly all "the ills that flesh is heir to," and not a few that are more the effects of man's own frailty than the result of service in or exposure to pernicious climates. I have therefore preferred making a selection of the following among the order miasmatic diseases for the comparative statistics in the succeeding pages, viz.:

Fevers.	Cholera.
Eruptive fevers.	Diarrhœa.
Catarrhs.	Rheumatism.
Dysentery.	Boils.

From this we observe that the table of climatorial diseases is insufficient to include all that owe their origin to local, and in many cases remediable causes; neither is the list above given capable of including all maladies that depend upon influences of local climate and other circumstances.

Memoranda on the state of health of the troops at Tein-Tsin during each monthly period from 16*th of November*, 1860, *to* 30*th of September*, 1861.

	November.		December.		January.		February.		March.		April.		May.		June.		July.		August.		September.	
	British.	Seikhs.	British.	Seikhs.	British.	Seikhs.	British.	Seikhs.	British.	Seikhs.	British.	Seikhs.	British.	Seikhs.	British.	Seikhs.	British.	Seikhs.	British.	Seikhs.	British.	Seikhs.
1. Present strength, *i.e.*, the numbers which form the strength from which the following per-centages have been calculated	3585	313	3488	293	3516	292	3473	291	3378	290	3346	298	3415	289	3416	289	3565	288	3667	288	3688	318
2. Sick in hospital on last day of the month	206	25	244	29	282	12	241	10	217	9	201	14	164	11	259	10	283	13	321	13	189	10
3. Total numbers of admissions during the month	484	36	402	62	472	40	356	23	311	17	301	31	282	29	451	27	675	30	508	29	359	16
4. Total deaths during the month	10	—	15	—	23	1	7	—	9	—	16	—	6	—	8	—	37	1	20	—	20	—
5. Per-centage of sick to strength (calculated from admissions, or calculated for the entire year)	13·50 162·00	11·50 138·00	11·52 138·24	21·15 253·80	13·42 161·04	13·69 164·28	10·25 123·00	7·10 94·80	9·20 110·40	5·86 70·32	8·96 107·52	10·72 128·64	8·26 99·12	10·03 120·36	13·20 158·40	9·34 112·08	18·68 224·68	10·41 124·92	13·85 166·20	10·00 120·00	9·78 117·56	5·03 60·06
6. Per-centage of death to strength per annum ...	3·12	—	5·16	—	7·80	4·08	2·40	—	3·12	—	5·64	—	2·04	—	2·77	—	12·36	4·08	6·48	—	5·48	—
7. Per-centage of admissions from zymotic diseases to total admissions	70·34	33·33	47·50	70·98	58·26	65·00	52·80	52·17	42·44	52·94	37·20	38·70	41·48	37·93	51·66	59·25	65·62	60·00	70·66	41·37	62·39	31·25
8. Per-centage of cases of zymotic diseases in hospital on last day of month	66·83	32·00	53·19	33·87	53·76	50·00	41·93	30·00	45·11	44·44	43·28	14·28	65·81	18·18	51·35	40·00	65·37	38·46	69·47	38·46	62·91	33·33
9. Per-centage of deaths from zymotic diseases to total deaths from disease...	80·00	—	100·00	—	47·82	—	28·57	—	77·77	—	31·25	—	83·33	—	75·00	—	51·35	100·00	85·00	—	95·00	—
10. Admissions and deaths from wounds received in action...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Fatal diseases among the troops at Tein-tsin.

NOVEMBER, 1860.

	Diseases.	No. of deaths.	Average period under treatment.	Average age of patients.
British.	Catarrh . . .	1	not noted	not noted
	Hepatitis . . .	1	,,	,,
	Dysenteria chron. .	1	,,	,,
	Diarrhœa . . .	2	,,	,,
	Total .	5		
Seikhs.	None.			

DECEMBER.

British.	Fevers . . .	5	17 days	31
	Eruptive fevers (small-pox) . . .	2	8 ,,	23
	Dysentery . .	6	28 ,,	27
	Diarrhœa . . .	1	38 ,,	25
	Intemperance (?) .	1	—	23
	Total .	15		
Seikhs.	None.			

JANUARY, 1861.

	Diseases.	No. of deaths.	No. of days ill.	Age of patient.
British.	Feb. c. c. . . .	3	18	26
	,, typhoid . .	2	15	30
	,, intermittent .	2	7	29
	Pneumonia . .	5	12	25
	Bronchitis . .	1	32	39
	Hepatitis, acute . .	1	1	21
	Dysent. chron. . .	3	63	26
	Apoplexia (a potu) .	1	1	29
	Phthisis pulmonalis .	2	27	28
	Phlegmon . . .	1	8	23
	Delirium tremens .	1	2	33
	Ebrietas . . .	1	1	36
	Total .	23		
Seikhs.	. . . .	1		

February, 1861.

	Diseases.	No. of deaths.	No. of days ill.	Age of patient.
British	Febris c. c.	1	9	20
	Variola	1	19	26
	Pneumonia	1	9	23
	Phthisis pulmonalis	1	62	26
	Hepat. chron.	1	56	30
	Apoplexia	1	6	32
	Ebrietas	1	found dead	33
	Total	7		
Seikhs.	None.			

March, 1861.

British	Febris int.	1	2	28
	Febris c. c.	1	69	42
	Hepat. acut.	1	7	37
	Dysent. chronic	2	105	25
	Diarrhœa	3	48	25
	Epilepsia	1	5	37
	Total	9		
Seikhs.	None.			

April, 1861.

British	Febris c. c.	1	7	25
	Pneumonia	1	5	21
	Phthisis pulmonalis	5	56	26
	Bronchitis	2	72	34
	Morbus cordis	1	81	27
	Hepatitis chron.	1	45	30
	Dysent. chron.	1	45	27
	Diarrhœa	2	48	29
	Delirium tremens	1	12	26
	Tetanus	1	13	26
	Total	16		
Seikhs.	None.			

May, 1861.

	Diseases.	No. of deaths.	No. of days ill.	Age of patient.
British	Febris c. c.	5	11	28
	Phthisis pulmonalis	1	44	35
	Total	6		
Seikhs.	None.			

June, 1861.

British	Febris c. c.	4	11	28
	Dysent. acut.	2	11	22
	Morbus cordis	2	sudden	25
	Total	8		
Seikhs.	None.			

July, 1861.

British	Febris c. c.	3	9	28
	Amputation after fever	1	59	25
	Dysentery	11	31	24
	Diarrhœa	3	17	28
	Cholera	4	1	25
	Insolatio	15	2	28
	Total	37		
Seikhs		1		

August, 1861.

British	Febris int.	1	15	32
	Febris c. c.	1	12	30
	Dysentery	10	28	26
	Diarrhœa	3	6	26
	Cholera	2	1	23
	Insolatio	3	14	29
	Total	20		
Seikhs.	None.			

SEPTEMBER, 1861.

	Diseases.	No. of deaths.	No. of days ill.	Age of patient.
British	Fever . . .	3	27	29
	Hepatitis . . .	1	8	30
	Dysentery . .	9	24	27
	Cholera . . .	2	2	24
	Diarrhœa . . .	5	31	29
	Total .	20*		
Seikhs.	None.			

Rate of admission per cent. per annum among the following classes at Tein-tsin, from 16th November, 1860, to —

Months.	British Soldiers.	British Officers.	Seikh Soldiers.
November, 1860	161·28	138·24	138·00
December „	138·24	166·56	253·80
January, 1861	161·40	201·00	164·28
February „	123·00	153·88	94·80
March „	110·70	117·60	70·32
April „	107·52	63·96	128·64
May „	99·00	100·68	120·36
June „	158·40	180·72	112·08
July „	224·16	212·16	124·92
August „	166·20	185·28	120·00
September „	117·36	103·20	60·36
Total for ten months	1490·62	1653·34	1387·50
Average annual rate, as shown in eleven months	135·51	150·30	126·13

The above figures show, at a glance, that the general rate of sickness during the period has been least among the black troops, next in extent among the British soldiers, and greatest of all among the officers, they being the very class who according to theory, ought to have shown the highest state of health.

* And of 101 invalids sent over in September, five died prior to final embarkation.

Average daily sick at Tein-tsin, among British and Seikh troops during the following months, viz.:—

Months.	British.			Seikhs.		
	Daily per cent. in hospital.	Daily per cent. excused duty.	Daily per cent. non-effective.	Daily per cent. in hospital.	Daily per cent. excused duty.	Daily per cent. non-effective.
November, 1860 ...	No information.			No information.		
December „ ...	5·13	Not stated.	5·13	6·48	Not stated.	6·48
January, 1861 ...	7·67	0·93	8·60	7·26	1·03	8·29
February „ ...	7·37	0·48	7·85	3·78	1·03	4·81
March „ ...	6·42	0·53	6·95	2·41	1·03	3·44
April „ ...	6·36	0·29	6·65	4·49	0·69	5·18
May „ ...	4·80	0·35	5·15	6·57	0·68	7·25
June „ ...	6·58	0·49	7·07	4·49	0·69	5·18
July „ ...	8·54	0·84	9·36	4·51	0 68	5·19
August „ ...	8·64	0·98	9·62	5·90	0·69	6·59
September „ ...	7·89	0·65	8·54	3·77	0·62	4·39
	69·40	5·54	74·94	49·66	7·14	56·80
Average for ten months	6·94	0·55	7·49	4·96	0·71	5·68

The subjoined table gives in a concise form the rates of admissions and deaths per cent. of strength of British and Seikh troops, at Tein-tsin, from November, 1860, to September, 1861.

Months.	British.		Seikhs.	
	Per-centage of admissions per annum.	Per-centage of deaths per annum.	Per-centage of admissions per annum.	Per-centage of deaths per annum.
November	161·28	3·12	138·00	—
December	138·24	5·16	258·00	—
January	161·40	7·80	164·28	4·08
February	123·00	2·40	94·80	—
March	110·40	3·12	70·32	—
April	107·52	5·64	128·64	—
May	99·00	2·04[1]	120·36	—
June	158·40	2·77	112·08	—
July[2]	224·16	12·36	124·92	4·08
August	166·20	6·48	120·00	—
September[3]	117·36	6·48	00·36	—
Total	1566·96	57·37	1331·76	8·16
Average for eleven months...	142·45	5·21	121·07	0·74
Deduced for twelve months...	155·40	5·68	132·07	0·80

From tables forwarded to England, by Staff-Surgeon Bindon, I am able to continue these statistics, as regards British, thus:—

	British.		
	Per-centage of admissions per annum.	Per-centage of deaths per annum.	
October . .	118·08	2·41	No Seikhs.
November .	105.00	1·29	,,

As elsewhere stated, there were of the troops invalided, as follows:

[1] In May	71
[2] July—sent to Taku for change of air .	70
[3] In September	101

No Seikhs were actually invalided, but five or six may be considered to have been unfit for service, including the two whose hands and wrists had been so severely injured by the Chinese, among whom they had been prisoners, as to unfit them for the duties of a soldier.

In order, therefore, to give in the most concise possible form the results of these statistics, I believe that the average daily number unfit for duty on account of illness was, among the British 5·49; the Seikhs, 2·68 per cent. of strength.

	British.	Seikhs.
The admissions annually per cent. would be as shown in the tables, among . .	155·43	—
The deaths per cent	5·68	0·80
The ratio invalided in addition, was . .	4·18	0·00

Thus, then, we find that the annual loss per cent. in the troops stationed in the north of China may be taken to have been 10·59.

For the purpose of contrasting this rate with what takes place elsewhere, I observe that the average rate of sickness during the Peninsular war is said to have been twenty-one in every hundred soldiers.* We however learn that of 100 Englishmen from fifteen to forty-five years of age, that is, of an age corresponding to that of our soldiers at Tein-tsin, the annual

* 'England and her Soldiers.'

rate of death is *one*. In the Crimea, the rate of death was 3 per cent. by wounds, and eighteen per cent. from disease, these numbers being in addition to those under the head of men invalided.

I may, for the sake of further comparison, note the rate per cent. of mortality at some of our most sickly stations, as obtained from published returns, viz.;

Jamaica	6 to 13
Peshawur	5 „ 12
Dinapore	2 „ 11
Chinsurah	2 „ 14
Fort William	3 „ 8
Dum Dum	3 „ 20
Berhampore	6 „ 9

From these figures, then, we are compelled to admit that our loss in the north of China has been by no means severe, as compared with what is the ordinary average at several stations at which our regiments have from time to time been quartered.

I am aware that, as Sir Ranald Martin remarks, the mortality of a single year cannot serve as a basis for estimating the mean mortality of any particular place. I trust, nevertheless, that the present series of statistics may not be without their value. They will, it is hoped, by giving a correct view of our rate of loss, indicate the proportion of vacancies in the various grades of our force, should necessity arise, and also the proportion of casualties for which, on a future occasion, it may become necessary to be prepared.

The following table may not be devoid of interest as showing what was the rate of non-effectives by death and invaliding during the year 1860, among the regiments that now formed our garrison. It is true that the returns from which this table has been extracted included a portion of the time they were stationed at Tein-tsin, but as it is now only given for the sake of comparison this is of immaterial consequence.

Regiment.	Strength.	Died.	Invalided.	Per-centage to strength of loss through disease.
10th Company, Royal Engineers	78	1	—	1·28
3rd Battery, 13th Royal Artillery .	202	12	3	7·42
4th „ „ .	209	10	12	10·52
Military Train . . .	250	16	5	8·40
31st Regiment . . .	1137	28	10	3·43
2nd Battalion, 60th Rifles .	816	56	30	10·53
67th Regiment . . .	854	46	26	8·43
Seikhs	310	53	16	21·63

A consideration of the above table is sufficiently instructive to justify a few observations regarding it. The figures themselves show how great a difference existed between different corps as regards the loss sustained by sickness. Let us, therefore, see if possible how far this may have been occasioned by the particular circumstances of each.

In regard to the Royal Engineers, the numbers that furnish the statistics are too restricted to warrant any conclusions being drawn, and, moreover, the men of this corps are from the nature of their duty less exposed than others to the causes of disease.

The 3rd Battery, 13th Brigade Royal Artillery came from Bombay to China. During the voyage the men were very healthy, but having been encamped in small tents at Deep-water Bay on the eastern side of Hong Kong in the month of May, two fatal cases occurred from hepatitis. Attacks of remittent fever, in one case fatal, are stated to have been occasioned by the degree of wet to which the men were exposed while embarking there for the north. It is stated that throughout the year, the proportion of cases of sickness was smaller among a body of young drivers who had joined the battery soon before embarkation at Bombay, than it was among the older soldiers. While the battery was encamped in the north of China, a death is reported to have taken place from debility and anæmia, there having been, as shown by post-mortem examination, no organic lesion apparent, and thus similar to the cases we meet with at

Hong Kong. During the time generally that the men were encamped at Tein-tsin, the prevailing diseases are said to have been diarrhœa and inflammatory dysentery.

The 4th Battery of 13th Brigade came to China from Madras. During the voyage to China we learn that the heat on the horse deck was very great. Several men are said to have become affected with typhoid fever, and two to have died from this disease. It became necessary on the arrival of the battery at Singapore to land the men and horses, to empty and clean the ship, and they having then proceeded on their voyage, the health of the men improved. On arriving at Hong Kong they were placed in camp at Deep-water Bay, and were almost immediately after landing attacked with intermittent fever and dysentery, which diseases were at the time believed to have been occasioned by the proximity of rice fields, to the emanations from which they were exposed.

The Military Train consisted chiefly of very young men; this corps proceeded direct from England to China. The nature of the duties the men had to perform necessitated a great degree of exposure.

The 31st Regiment which had come on from India, consisted for the most part of old soldiers. This corps had not been exposed to arduous service immediately prior to the present expedition; yet in regard to the diseases from which the men suffered in the north of China, a great similarity in type to what is seen at Hong Kong is noted by the surgeon in charge.

The 2nd Battalion 60th Rifles consisted in a great measure of young soldiers. The regiment had lately been at the Cape of Good Hope, and had seen a little field service during the Indian mutiny. We learn that the diseases that prevailed among the men were chiefly fever and diarrhœa. The cases of fever of the intermittent type that occurred were chiefly among men who had been subject to the disease in India. In regard to continued fevers, the surgeon in charge remarked that near the coast the attacks were for the most part of an ephemeral nature. More inland, and after the force had reached Pekin the attacks assumed rapidly a typhoid form. In regard to diarrhœa its occurrence is attributed to a variety of circum-

stances, as for instance—1, indulgence on the part of the men in the native spirit called sham-shu; 2, eating large quantities of fruit; 3, the saline impregnation of the water in the north of China; and, 4, their having had at times to sleep upon the damp ground.

The 67th Regiment had been stationed at Canton during the year preceding the expedition, and had, while there, suffered severely from fever affecting the soldiers; thus they were in an impaired state of health at the time they started for the north of China.

CHAPTER XI.

PATHOLOGY OF DISEASES AT TEIN-TSIN.

1. Febris c. c.—2. Febris typhus—3. Febris intermittent—4. Rubeola maligna—5. Variola—6. Catarrh and bronchitis—7. Pneumonia—8. Phthisis pulmonalis—9. Morbus cordis and aneurism—10. Intoxication—11. Delirium tremens—12. Epilepsy—13. Tetanus—14. Apoplexy—15. Coma—16. Insolation—17. Hepatitis—18. Cholera—19. Diarrhœa—20. Dysenteria acuta—21. Dysenteria chronica—22. Chronic indigestion—23. Phlegmon.

It is necessary to observe at the outset, that the following record of post-mortem appearances in the bodies of soldiers who died at Tein-tsin have been collected and arranged from the necrological register of the hospital there. I cannot but regret that in many important points the information is defective, and in others the appearances are not described in very exact language. I consider, however, that even such as they are, they may be considered as a contribution to our knowledge of the ravages of disease upon the bodily system; and I would add that, situated as we were at Tein-tsin, with severe and fatal disease among the troops, engrossing the time and attention of the executive medical officers, the wonder is, not that in some respects the reports of post-mortem appearances are somewhat defective, but that in any respect they are so full as they are. With this remark I pass on to the subject itself.

1. Febris cont. com.—Of the fatal cases of this disease recorded in the statistical returns, reports of post-mortem examination of sixteen have been preserved; from these we learn the following particulars.

a. As regards the state of the *brain and its membranes.* In eight cases the appearances of these parts is not noted. In one

it is stated that a clot the size of a hen's egg was found in the middle lobe (!)* of the brain, and another at the inferior surface of the posterior lobe; a quantity of effused blood between the convolutions. In one about two ounces of serum was found at the base of the brain, and effusion beneath the pia mater. In one the brain was reported healthy, except slight increase of serosity beneath the membrane; a little serum also in the lateral ventricles, tinged with blood. In one there was apparent the mark of an old fracture of the skull on the right side. The dura mater of the whole of this side was stained of a dull dirty colour; some serum of a reddish tinge was found in the ventricles; and it is stated that one of the prominent symptoms during the fatal illness had been delirium. In one case there is said to have been considerable serous effusion beneath the membranes of the brain, with venous congestion. The substance of the brain was soft. Ventricles contained a small amount of fluid, and the choroid plexus was congested. In one the report simply states that serous effusion existed beneath the membranes, and that there was venous congestion, and a small quantity of fluid in the ventricles. In one the brain is described as healthy; but the report adds, there was "an unusual amount of fluid about the back and base of the organ." In one some serous effusion was found at the base of the brain; the lobes at the longitudinal fissure were slightly adherent, but (it is stated) not from active inflammation; membranes at junction of cerebellum with the cerebrum congested; brain itself rather pale, vessels on surface congested.

B. *Lungs.*—Of sixteen cases in which the state of lungs and pleura is noted, it is stated that in one these organs were healthy anteriorly, slightly congested posteriorly. In one the posterior part of both were adherent to the sides of the chest, much congested, and filled with frothy mucus. In one there is stated to have been extensive inflammation of right pleura, with effusion of

* It is well to state with reference to the remark here made, and to others of an ambiguous nature that may hereafter occur, that I am not personally responsible for them. I have extracted the remarks from a summary prepared for me, from the necrological register, and prefer recording them here in the form in which I received them to making emendations which might be equally uncertain in their meaning as those to which exception is now taken.

fluid and lymph into its cavity; tubercles in the right lung. In one extensive adhesions of old standing, both lungs congested posteriorly, of a claret hue, with some dark patches. In one both lungs were congested posteriorly, and of a dark violet colour. In one the left lung was adherent at the apex, the bronchial tubes thickened and enlarged. In one the left lung was firmly adherent by old adhesions, the anterior surface of both healthy; posterior portions of both highly congested. In one the lungs are simply described as being congested, and of a dark colour posteriorly. Two congested posteriorly; one much congested posteriorly. In one the right lung adhered by old adhesions; posterior portions of lungs dark, livid, and somewhat congested. In one the left lung was healthy; the right contained a chalky deposit at the apex. In one they were both stated to be healthy. In one the right lung adhered by old adhesions, was congested posteriorly, contained a good deal of serum, generally of a dark colour; and in one the lungs are said to have been pale with slight redness at apices; the greater portion of the right adherent by old adhesions.

c. *Heart.*—The state of the heart is noted in sixteen cases. Of these, in one the organ was stated to be rather large, valves perfect; a clot in the right ventricle. In one it was small, with a loose, discolored clot in the right ventricle. In one there is said to have been slight effusion into the pericardium; the heart fatty, mitral valves contracted, walls of left ventricle thickened. In one there was said to be two ounces of fluid in the pericardium, the heart pale and fatty, right ventricle dilated, mitral valves slightly contracted. In one it is said to have been healthy; a large clot in the right ventricle, the left empty. In one the heart was small, right ventricle filled with a fibrinous clot. In one the deposit of fat in the organ is said to have been extensive. In one it was flabby, the veins congested, otherwise healthy; a small clot in the right ventricle. In four it is recorded as healthy. In one about three ounces of clear serum in the pericardium; the texture of the heart flabby; a deposit of fat on the surface. In one large and flabby, pericardium containing one ounce and a half of fluid. In one flabby, a good deal of fat on the surface; left ventricle enlarged excentrically; and in one very flabby, right ventricle containing

some fluid blood, the pericardium containing a small quantity of serum.

D. *The stomach.*—The appearances observed in this organ are recorded in eleven cases. Of these, in one it is said to have been contracted; its mucous membrane slightly inflamed. In one to have presented two or three patches of a dark red colour. In one the mucous membrane to have been in red patches. In one the report states that several patches of congestion on the mucous membrane existed. In one the œsophagus was of a dark red colour from the fauces to the stomach; it is further stated in the report of this case, that on cutting into the stomach it was nearly empty; the large veins were full of dark blood; about three fourths of the stomach, chiefly along the greater curvature, presented a thickly arborescent appearance, from congestion of the small veins; the greater part of the above, separated from the healthy part by a line of demarcation, in some places were defined, in others spreading into a red blush; the mucous membrane of this part dark, soft, and easily rubbed off (in this case vomiting and purging had been very urgent, and exhaustion took place rapidly). In one the organ is said to have been of an ashy hue, but tolerably healthy. In one rather large; the veins along the greater curvature congested. In two it is briefly stated to have been "healthy." In one it showed marks of congestion, and in one a small dark patch of redness was found at the greater curvature.

E. *Large intestine.*—The state of the large intestine is recorded in sixteen cases. In one it is said to have presented some ulceration, and a few enlarged glands. In one to have been slightly adherent to surrounding parts; its mucous membrane healthy. In two healthy. In one that the mucous membrane of the lower half of the colon and rectum was much congested, the ascending and descending colon congested, with dark-colored patches. In one that patches of a dark violet colour were observed along the whole extent of the descending colon; similar patches in the ascending and transverse colon, but not so deep in colour. In one the peritoneal surface of this intestine was much inflamed; the mucous membrane also in inflamed patches. In one the intestine is said to have been contracted,

of ashy green colour, the substance rather thickened, the mucous membrane diseased throughout, of a dark madder colour, with streaks of dull colour, covered in parts with granular-looking exudation; these streaks were found to have been in a state of inflammation running into ulceration. In one the intestine showed generally a reddish blush. In one the large intestine was ash-colored, not congested; the whole surface studded with slightly enlarged solitary glands, showing the opening of the duct as a dark speck or point. In one the upper part of the intestine presented a mass of raised ulcers, some of very recent formation, others evidently the result of former disease. The ulceration extended nearly the whole length of the intestine, but the ulcers became smaller and less numerous towards the lower part. In one, portions of the large intestine were of a pale ashy colour, others of a claret red colour; a dirty exudation existed on the mucous membrane, and some superficial ulcerations were also found. In one there were large patches of ulceration scattered throughout the whole length, some portions so thickened from deposition that the thickness was nearly a quarter of an inch in degree. In one the intestine showed patches of congestion throughout its whole length; some were deep red, some of a bluish black colour. In one the mucous membrane is said to have been generally healthy, except at the caput of the ascending colon, and the rectum, where slight redness existed. And in one the intestine is said to have been generally reddish throughout, showing diseased mucous membrane and ulcers in a healing state, the greatest amount of disease having been in the rectum.

F. *Small intestine.*—In reference to sixteen cases in which the appearances of the small intestine are recorded, we find that in one, twelve feet of the lower part of it are said to have shown papules, many in a state of ulceration. In one the lower part is stated to have been bound down by adhesions, the coils adherent to one another, one coil so much compressed that the passage was obliterated; in one healthy. In one slight patches of inflammation are said to have existed in the ileum. In one a number of minute papulæ, some white, others red and inflamed, were found in the lower part of this intestine. Peyer's

patches are also said to have been very apparent, and of a dark red colour. In one small patches were found here and there, and minute papulæ with black points. In one there was a good deal of patchy congestion in the mucous membrane; the upper part of the intestine was healthy; in the lower part, papular appearance was observed, the mucous surface becoming red and inflamed towards the ileo-cæcal valve. In one a slight reddish blush is recorded over the whole of the lower part of the small intestine, near the cæcum, becoming deeper in colour and in patches. Here also were some whitish papulæ in great numbers. In one the intestine is said to have been of an ash colour from the duodenum downwards, studded with small white papulæ, especially towards the ileo-colic valve. One or two of Peyer's patches showed a good deal of congestion. In one this intestine is said to have been studded along its whole length with small, whitish spots, about the size of pins' heads; Peyer's patches to have been dark-colored and raised. In one there were lichen-like papulæ along its whole extent. In one it is reported tolerably healthy, but here and there the glands were evidently diseased, although not to any great extent. In one about six inches of the distal portion of the ileum exhibited marks of recent inflammation; the mucous surface was thickened. In one Peyer's patches were distinctly marked. In one the greater part of small intestine was more or less arborescent; a number of semi-opaque papulæ scattered here and there; and in one some reddish patches were found in the small intestine, and also a number of lichen-like papulæ.

G. *The liver.*—As regards sixteen cases in which the state of this organ was noted, we learn that in one it was enlarged, granular, adherent to the wall of the abdomen and colon, into which an abscess had burst, and several small abscesses had subsequently formed. In one it was enlarged, granular, and presented some yellowish patches on the surface. In one it is recorded as having been enlarged, congested, and fatty. In one as rather large, and infiltrated with yellowish patches. In one studded with yellow spots. In one "normal." In one adherent at the upper and outer surfaces; healthy in other respects. In one rather light-colored, and not congested. In one healthy in appearance; its large vessels full of venous blood; the gall-

bladder filled with thin dark bile. In two "healthy." In one larger than natural, pale, with patches on the surface of a "waxy" colour; homogeneous in substance. In one, much enlarged, pale in colour; the hepatic lobules well marked. In one it is simply stated to have been enlarged, of a pale brown colour. In one it is stated to have been enlarged, but healthy; the gall-bladder full of bile; and in one it is described as enlarged and firm in structure; pale, of a nutmeg appearance, and as having contained a yellow deposit.

H. *The kidneys.*—In sixteen fatal cases of continued fever in which the condition of these organs were recorded, the records inform us that in one they were rather pale, with whitish spots; in one of a pale colour; in one enlarged and fatty; in one pale and fatty. In one they are described as being both large, but generally healthy. In one there existed a small cyst on the convex border, containing fluid, the cortical portion of both thicker than natural. In four they were described as being healthy. In one rather harsh to the knife, and slightly granular. In one small, and cortical, substance rather pale. In one rather full, not congested, substance rather pale, and contained a general deposit; the line between the cortical and other structure not defined. In one they are said to have been enlarged, but healthy; in one dark and congested; and in one to have been over-large, firm, and showing a deposit in the cortical substance.

I. *The spleen.*—The following is an abstract of the reports on the state of the spleen observed in sixteen cases of the above form of fever, in which this organ was examined, viz.:—In one small and fleshy; in one congested, enlarged, and darker than natural; in one congested and friable; in one rather soft; in one very friable; in one small; in one half as large again as natural, corrugated on the surface; in one slightly congested; in one rather small; in one healthy but rather large; in one not enlarged nor congested, of a maroon colour; in one enlarged, softened; in two healthy; in one enlarged to double its size, friable; and in one over firm.

2. FEBRIS TYPHUS.—In only two fatal cases of disease noted under this head has the state of the organs been recorded, and in these, the reports available are by no means satisfactory; for no record has been preserved of the appearances of the brain

and its membranes. Of the other organs, we learn that as regards—

B. *The lungs.*—In one case the right lung was adherent, and in a chronic state of hepatization; the left compressed. In one the pleura was adherent to a great extent, and the lungs congested.

C. *The heart.*—In one case this organ is described as having been enlarged and fatty, and to have presented hypertrophy with dilation of the left ventricle, and "a fibrinous clot." In one, to have been very fatty, otherwise healthy.

D. *The stomach.*—In one case it is said to have been adherent to the organs around it; in one, to have been compressed and displaced by the liver, and to have contained some blood.

E. *The large intestine.*—In only one case has its condition been recorded; it was in it adherent to the abdominal walls by false membrane.

F. *The small intestine* seems to have been examined in only one case. It is in that instance said to have contained some blood; that the abdominal parietes and mesentery were loaded with fat, as also the omentum.

G. *The liver* was in one case stated to have been much enlarged, and on a section being made into it, to have shown the earlier stages of "nutmeg." In one it was enormously enlarged and fatty.

H. *The kidneys* were in one, both enlarged, irregular, and imbedded in masses of false membrane; in the other instance the conditions of these organs was not noted.

I. *The spleen* is said, in the only case where its appearances are noted, to have been enlarged and irregular.

3. FEBRIS INTERMITTENS, a record of the post-mortem appearances in only two fatal cases under this head is available, and this in a very unsatisfactory state. In these, we find that of—

A. *Brain, &c.*, the appearances have not been noted.

B. *The lungs, &c.*—In one they are described as large and fleshy-looking, filling up the cavity of the chest, and not in any way presenting the atonic distension of emphysema. In one the left lung completely hepatized; posterior part of the right highly congested; the cells filled with fluid.

C. *The heart.*—In one we learn that there was general hypertrophy, the organ so enlarged that it resembled the heart of a bullock more than that of a man. In one it was healthy.

D. *Stomach.*—Not noted.

E. *The large intestine.* In the one instance in which its examination was noted, is said to have been healthy, but large and protruding.

F. *The small intestine* was also only reported in one instance, and like the large was said to have been healthy, but large and protruding.

G. *The liver,* in one of the cases, was large, but not fatty. In one enlarged, friable, congested, presenting nutmeg appearance.

H. *The kidneys,* in one were half as large again as natural. In one natural.

I. *The spleen.*—In one case it is reported as of increased size. In one as healthy.

4. RUBEOLA MALIGNA.—One fatal case is recorded under this head. It is more than probable from the history that it was in reality one of malignant smallpox; one in which life succumbed before the eruption became fully developed; or in which, perhaps, from a scorbutic diathesis in the subject, the disease assumed a hæmorrhagic type, such as occasionally happens in India in persons of this peculiar constitution. The post-mortem appearances are unfortunately very imperfectly recorded. Following the arrangement of organs already adopted, we find that B, *the lungs,* are described as congested in their posterior part; otherwise healthy.

E. *The large intestine.*—The internal surface was coated with grumous blood.

F. *The small intestine.*—The internal surface was also coated with grumous blood; some small spots about to ulcerate.

In the report of this case we find it stated that the whole of the body and thighs were covered with a dark *raised* eruption, the right side of the forehead suffused with dark blood; large bullæ or blisters on the posterior aspect of wrists, extending up the arm, and down the back of the hand.

5. VARIOLA.—In only one case of death by variola have the post-mortem appearances been recorded. In it we find that as

regards B, *the lungs*, both were emphysematous at their anterior margin, congested posteriorly to a degree as hard as hepatization; small deposits, the size of a pea, were found in them.

D. *The stomach.*—It was inflated, and contained a green opaque fluid matter.

E. *The large intestine.*—The ascending colon was healthy; the remainder diseased throughout, with patches of a milky white exudation.

F. *Small intestine.*—It is said to have been "healthy, perhaps rather bleached in appearance."

G. *The liver.*—Rather large; healthy looking; but over-firm with a cartilaginous feel when cut.

H. *The kidneys* are recorded to have been rather firm and hard, the cortical substance pale and granular.

I. *The spleen* was flattened, firm, and fleshy.

6. CATARRH AND BRONCHITIS.—In six fatal cases of these diseases records have been preserved of post-mortem appearances of some of the principal organs. Following the order already adopted, they are the following:

B. *The lungs.*—In one case, the left pleura is described as adherent throughout, the lung contracted and hepatized, the result of old disease. The apex of the right lung affected with acute inflammation, partly consolidated. In one the front part of the left lung was adherent; on breaking down the pleura, it contained a large quantity of pus, which compressed and obliterated the cellular tissue of the lung; the right was healthy. In one the left pleural cavity was filled with clots of blood; some adhesions at apex of right lung; these organs otherwise healthy. In one there was adhesion of the left pleura; lungs were engorged with bloody serum; posterior part of the left contained a collection of grumous pus. In one the bronchial tubes on the right side was filled with pus, tubercles were scattered through the right lung. Left lung adherent, and contained two cavities, each as large as a turkey's egg, and partially filled with pus. (It is evident that this case was really one of phthisis). In one the left pleura was filled with fluid, which completely compressed the lung, except at its upper part, where it was consolidated by tubercular deposit; the right healthy.

C. *The heart.*—This organ is described in one as normal. In one it was fatty, and large by hypertrophy of the ventricles. In one an opening, lengthened in shape, and two inches in circumference at the junction of the transverse and descending aorta was found; its edges were rounded, it communicated with a sac embedded in the upper lobe of the left lung, which burst into the fissure between the upper and lower tube of the lung, whence it poured into the pleural cavity. (Death had evidently been produced by the bursting of an aortic aneurism.) In one the state of the heart is described as pale, large, and flabby; dilatation of the right side, hypertrophy of the left. In one, the organ was much atrophied, and pale in colour.

D. *The stomach.*—This organ was only noted in three cases. In two it was healthy. In one it was easily torn, and presented a grey appearance.

E. *The large intestine,* in the five cases in which its condition has been noted, was in three healthy. In one some parts of it were inflamed, the glands of the mesentery enlarged, and containing tubercle. In one it is described as covered with fatty deposition.

F. *The small intestine.*—The state of this organ was only noted in five cases. In three it was healthy. In one the report states that there was air beneath the peritoneum covering the small intestine, resembling bullæ. In one it was pale in colour, its glands slightly enlarged.

G. *The liver.*—Of the six cases in which its condition is recorded we learn that in one it was healthy. In one enormously enlarged, a deposit of pus cells in the left lobe. In one enlarged, its surface irregular; in one enlarged and hard; it grated when cut; mottled and lobulated in appearance. In one it was small and pale. In one small, gritty on being cut, and studded with white granules.

H. *The kidneys* are recorded in three cases as healthy. In one slightly enlarged, the cortical substance fatty, the tubular inflamed, pressure made pus ooze out. In one they were small and pale.

I. *The spleen.*—In one case it is recorded as healthy. In one of a dark colour, not soft nor friable. In one small. In one as being four times its natural size; pus in its substance.

7. Records of post-mortem appearances have been preserved in seven cases of PNEUMONIA, and from these we learn the following, viz. :

A. *Brain.*—Its condition has not been recorded.

B. *The lungs.*—Of these seven cases, in one the posterior part of the left lung was in a gangrenous state; right lung in an earlier stage of the disease. In one the lining membrane of the bronchia was congested; the base of left lung highly congested and friable, but no true hepatization; right lung posteriorly and inferiorly in the same state. In one the right lung was adherent firmly to the wall of the chest, the left consolidated so that it "resembled a liver." In one the left lung is said to have been hepatized. In one adhesions of the left pleura existed; the lungs were congested. In one the smaller bronchi were filled with pus, the right lung engorged with a bloody frothy fluid of very offensive odour, tubercles were scattered through it; the left was in a similar state, but the tubercles were in greater quantity, and broken down. In one the right lung was adherent to the walls of the chest, hepatized; the left congested.

C. *The heart.*—In the seven cases in which the state of this organ is recorded, it is said to have in one been healthy. In one slightly enlarged, pericardium containing ten ounces of fluid. In one it was somewhat increased in size, but healthy; a firm fibrinous clot in the right ventricle. In one the heart was greatly enlarged. In one the pericardium contained ten ounces of pus; the surface of the heart was rough, and coated with fibrine; there was congestion of the endocardium which extended into the large vessels; no deposit. In one the organ was enlarged, pale and fatty, the valves healthy. In one both ventricles were filled with a fibrinous clot.

D. *Stomach.*—The state of this organ was only noted in two cases, and in both these it was healthy.

E. *The large intestine.*—Of six cases reported, in one the lower part presented appearance of old disease. In three the intestine was healthy. In one it is said to have been anæmic in appearance; and in one to have presented traces of inflammation and thickening without ulceration.

F. *The small intestine.*—Of six cases in which the appearances were recorded, in four they were healthy. In one anæmic in

appearance. In one Peyer's patches were enlarged, but without ulceration.

G. *The liver.*—Of seven cases in which the state of this organ has been noted, in two it was healthy. In one enlarged, but its substance healthy. In one enlarged, but not fatty. In one larger than natural, having a nutmeg appearance. In one it was enlarged, with white deposit in the walls of the lobules. In one the right lobe was slightly enlarged, small yellowish patches scattered through its substance.

H. *The kidneys.*—Of five cases in which they seem to have been examined, we learn that in one they were large, but otherwise healthy. In one the tubular portion was partially obliterated by encroachment of the cortical portion. In one they were healthy. In one enlarged, the cortical portion increased in thickness, and paler than natural. In one congested but healthy.

I. *The spleen.*—Of five cases in which its state was noted, it was in two healthy. In one friable, and twice its natural size. In one enlarged and more firm than natural; and in one small and adherent.

8. PHTHISIS PULMONALIS.—Records of post-mortem examinations in eight cases of this disease are available; from which we learn the condition of the following organs, viz.:

B. *The lungs.*—In one, both were adherent at their apices to the walls of the chest; the substance of the left was healthy; that of the right studded with tubercles and vomicæ containing pus. In one, old adhesions of left pleura existed; the substance of the lung was healthy, the upper lobe of the right lung studded with tubercles. In one, in addition to the presence of old adhesions of the pleura, both lungs contained small vomicæ filled with pus. In one instance the right lung was reported healthy, the left adherent to the wall of the chest; on being cut into, it was gangrenous, emitting a most fœtid odour; in one the right lung adhered, a large cavity occupied nearly the whole of its substance, and was nearly filled with purulent matter; the left was slightly congested at the apex, otherwise healthy. In one both lungs are said to have been firmly adherent at the upper part; upper lobes of both consolidated by deposition of tubercle. In one, in addition to the right lung being consolidated by the deposition of tubercle, it contained a number of small cavities;

the upper part of the left lung was also consolidated, the lower part healthy. In one there were firm adhesions of the pleura of the right side; a cavity existed in the apex of that lung containing grumous pus; tubercles were scattered through it; the left contained tubercles in a state of softening.

C. *The heart.*—Of six cases in which its state was noted, we learn that in two it was healthy. In one small and flabby. In one was pale, in addition to being flabby. In one presented some old adhesions of pericardium, the cavity of which contained two ounces of fluid. The surface of the heart presented upon it a larger amount of fat than natural. In one it is simply recorded to have been small.

D. *The stomach.*—In the four instances in which the appearances of this organ were recorded, it is said in three to have been healthy. In one "healthy, quite empty."

E. *The large intestine.*—It is recorded to have in three cases been healthy. In one that its mucous membrane was thickened, exhibiting evidences of inflammation, but no ulcers. In one the intestine is said to have been much distended by gas, and contained little feculent matter. In one pale and anæmic. In one marked with livid and reddish patches, otherwise healthy. In one somewhat ash-coloured, studded with red stains or patches, the largest the size of a sixpence, the mesenteric glands enlarged.

F. *The small intestine.*—In two instances it is reported to have been healthy. In one much distended by gas, quite empty; in one pale and anæmic; in one, that a number of small ulcers existed in the jejunum and ileum; in one it is said to have contained a dark-coloured fluid; several small ulcers found, with rounded thickened margin; also red points or papulæ progressing to ulceration; in one Peyer's patches were inflamed with thinning of the coats.

G. *The liver.*—In one case this organ is recorded as healthy. In one enlarged, presenting the nutmeg appearance. In one rather enlarged, pale, and soft in texture. In one pale and friable. In one pale in colour and presenting the nutmeg appearance. In one somewhat congested, mottled, firm. In one as natural in size, of a bright colour; the surfaced mottled and granular looking, over-firm, and harsh to the knife.

H. *The kidneys.*—These organs are said, in four instances to have been healthy. In one, that the cortical substance was rather narrow; otherwise healthy. In one, that they were exceedingly pale throughout, and contained a light yellowish deposit. In one, that the cortical portion was thickened.

I. *The spleen.*—This viscus is recorded to have, in two instances been healthy. In one small and healthy. In one enlarged and friable. In one small, of a dirty chocolate colour, and grumous. In one of a red chocolate colour. In one pale and enlarged. In one enlarged, and containing a deposit of tubercle.

9. MORBUS CORDIS.—In the one case, under this head, which appears in the necrological register, we find the appearances to have been as follow, namely:

B. *Lungs.*—The left adherent at the apex, as also the right; a vomica with thick walls in the apex of the latter; a chalky deposit similarly situated in the latter.

C. *The heart.*—The organ was larger and paler than natural; the right ventricle much dilated, with atrophied walls, which were very soft and flabby; cavity of the left enlarged, with thickening of its walls; valves healthy; redness of semilunar valves extending into the aorta.

D. *The stomach.*—The mucous membrane is stated to have been easily detached and soft.

E. *The small intestine* was of a dull brown colour; Peyer's patches congested and inflamed.

F. *The liver.*—Congested.

G. *The kidneys.*—Congested.

H. *The spleen.*—Congested.

Aneurisma aorta.—One case of death from this cause appears in the above record; in it—

B. *The lungs* were at their upper parts adherent to the walls of the chest, and solid from tubercular deposit.

C. *The heart* was of a large size, healthy; an aneurismal tumour, capable of containing a pint of fluid, involved about two thirds of the aorta; contained organized fibrine, and recently deposited lymph.

G. *The liver* was much enlarged and engorged.

H. *The kidneys* were healthy.

I. *The spleen* was healthy.

10. Intoxication.—Three fatal cases from this cause appear in the records of post-mortem appearances. In these we found as follow, viz.:

A. *The brain.*—In one instance the record states that if anything it was contracted in size; the blood in the veins dark; about 12 oz. of serum at the base of the skull; membranes looking pearly; firm serous effusion beneath.

B. *The lungs.*—In one, matter from the stomach was found in the trachea; right lung healthy, except a few cicatrices in apex; left congested. In one the lungs, except anteriorly, were congested, and contained a good deal of serum; posteriorly they were impervious to air. In one the left bronchial tube contained a quantity of dark grumous fluid; the mouth and nose covered with matter discharged from the stomach; both lungs highly congested.

C. *The heart.*—In one it was healthy. In one covered with a layer of fat; right wall thin; cavities dilated; substance fatty.

D. *The stomach.*—In one case was healthy.

E. *The large intestine.*—In one was healthy. In one the glands stood up, flattish opaque milky papulæ.

F. *The small intestine.*—In one the glands three feet from the ileo-cæcal valve presented the above milky appearance. In one it was healthy.

G. *The liver.*—In two was healthy. In one enlarged, dark, and fatty.

H. *The kidneys.*—In one healthy. In one covered outside with a thick layer of fat; substance fatty.

I. *The spleen.*—In one it was firm and dark in colour. In one double the natural size, and dark.

11. Delirium tremens.—In two fatal cases of this disease, the post-mortem appearances in which are recorded, they were as follow, viz.:

A. *The brain.*—In one there was considerable effusion of serum between the layers of the arachnoid, more remarkable on the right than on the left hemisphere.

B. *The lungs.*—In one case the right was completely disorganized; its texture infiltrated with pus; the left consolidated. In one the right lung was consolidated posteriorly and infe-

riorly; the left consolidated and adherent to the costal pleura throughout its anterior extent.

C. *The heart.*—In one case was enlarged and fatty. Pericardium contained four ounces of fluid.

D. *The stomach.*—In one healthy.

E. *The large intestine.*—In both cases healthy.

F. *The small intestine.*—In both cases healthy.

G. *The liver.*—In two greatly enlarged, with yellowish deposit in its texture. (The precisely similar description of the appearances in both cases is remarkable.)

H. *The kidneys.*—In one healthy. In one of a pale colour, containing a deposit similar to that of the liver.

I. *The spleen.*—In one case healthy.

12. EPILEPSY.—In the one fatal case of this disease, the following were the appearances found, viz.:

A. *The brain.*—Considerably congested both internally and externally; "hard, as if partially preserved in spirits."

B. *The lungs.*—The right adherent to the wall of the chest, filled with miliary tubercle, commencing to cause suppuration; the left similarly affected.

C. *The heart* was hypertrophied and dilated, with some deposition of fat externally.

E. *The large intestine* was healthy, except being rather contracted in diameter.

F. *The small intestine* healthy.

G. *The liver* was enormously enlarged and congested; presenting what was apparently a deposit of fat in its substance.

H. *The kidneys* were "fatty."

I. *The spleen.*—Larger than natural, and friable in substance.

13. TETANUS.—It is much to be regretted that the records of the post-mortem appearances in this painful case, are so very meager as they are. Those now available only state of the *brain,* that it and the spinal cord presented no abnormal appearance, and of the *abdomen,* that it was tense and tympanitic. In regard to the local appearances, it is stated that a wound existed over the left tibia, immediately below the knee; bone found necrosed, softer and moister than natural around it. A small quantity of pus on the bone; left sciatic nerve more *vascular* than natural.

14. Apoplexy.—In the only case of this disease in which a record of post-mortem appearances is available, they were as under, viz.:

A. *The brain.*—A large quantity of clotted arterial blood found between the layers of the arachnoid; vessels highly congested, both arterial and venous; extravasated blood in anterior lobes.

B. *The lungs* healthy, except being slightly congested.

C. *The heart* healthy.

D. *The stomach;* E, *large intestine;* F, *small intestine,*—healthy.

G. *The liver,* enormously enlarged; surface had a mottled appearance; very friable.

15. Coma.—One fatal case appears recorded in the necrological register, under this head. The appearances presented in it were the following, viz.:

A. *The brain.*—Not congested: a small quantity of serum in the left ventricle; right ventricle full of serum; choroid plexus rather red; also the membranes at the base of the brain.

B. *The lungs,* mottled, pale, and dark bluish colour; not congested.

C. *The heart.*—Rather flabby; some fat on surface; no clot or coagulum in ventricles.

D. *The stomach.*—Showed some reddish stains.

E. *The large intestine.*—Showed some livid blue spots; the whole intestine papular, and studded with large solitary glands; no ulceration.

F. *The small intestine.*—General surface rather reddish; on being opened, some whitish papulæ visible, scattered here and there; Peyer's patches rather visible, and evidently diseased.

G. *The liver.*—Not enlarged; of a mottled colour on the surface; internally showing a yellowish deposit.

I. *The spleen.*—Of natural size, rather firm to the knife, and fleshy.

16. Insolation.—Of the eleven cases that proved fatal, a record of the post-mortem appearances have been entered in the necrological register; an abstract of these gives the following particulars, viz.:

A. *The brain.*—In one case the superficial vessels of the scalp are said to have been congested; there was also present venous

congestion of the brain; the ventricles containing a small quantity of serum; a large quantity was found at the base of the brain. In one the veins of the dura mater, and those on the surface of the brain, were congested; on the vertex of each hemisphere an effusion of serum beneath the arachnoid membrane, which gave it the appearance of lymph; the substance of the brain not congested; a small quantity of sanguineous serum in the ventricles, also in the inferior sub-arachnoid spaces. In one a large amount of blood escaped on removing the scalp; the vessels on the surface of the brain were so congested that they appeared as if they would burst; the brain was slightly congested; bloody serum in the lateral ventricles. In one the vessels of the scalp were congested; there was also venous congestion of the brain; a small quantity of fluid was found in the ventricles; a large quantity at the base of the brain. In one the vessels of the brain were not generally congested; there was some effusion beneath the membrane; the choroid plexus pale; the ventricles nearly full of serum; the membrane covering both hemispheres red and congested in spots, also thickened at these parts. In one there was a good deal of effusion beneath the (arachnoid?) membrane, also at the base of the brain. The choroid plexus was pale and dropsical; a small quantity of bloody serum in the right ventricle. In one the vessels of the scalp were congested, as also the vessels of the brain; a small quantity of fluid was found in the ventricles; a large quantity at the base of the brain. In one congestion of the scalp was present; there was fluid in the ventricles and at the base of the brain; and in one it is stated that the vessels of the brain were slightly congested; a small quantity of serum in the lateral ventricles.

B. *The lungs.*—Of the ten cases in which the appearances of these organs were noted, we learn that in one they were highly congested. In one, slightly congested posteriorly, otherwise healthy. In one, they are recorded as congested very much posteriorly, and containing a very large quantity of frothy serum. In two they are merely said to have been congested posteriorly. In one much congested posteriorly. In one it is stated that the posterior and upper parts of the lungs were congested and dark in colour. In one that they were congested by blood and feel

marshy. In one they are described as much congested, otherwise healthy; and in one as congested posteriorly, and filled with frothy blood.

c. *The heart.*—The condition of this organ has been noted in ten cases. In one it was pale and flabby. In one it was filled with dark uncoagulated blood; the walls of the right ventricle were much thickened, the valves healthy. In one it was rather flabby, a deposit on the surface, the walls of the ventricles thin, the valves healthy. In one healthy, with the exception of a slight deposit of fat externally; the right ventricle filled with dark blood, as also the right auricle, the left comparatively empty, pericardium containing more serum than natural. In one the heart was large and flabby; about twelve ounces of clear fluid was in the pericardium. In one it is said to have been healthy, all but empty. In one the pericardium contained three ounces of serum, the heart otherwise said to have been healthy. In one it was rather large, pale-coloured. In one it is said that the pericardium contained a small quantity of fluid, the heart was healthy; and in one the organ is described as excessively flabby, a deposit of fat externally, quite empty.

d. *The stomach.*—The state of this viscus was in three congested. In two healthy. In one, on being opened, around the œsophageal entrance, and along the lesser curvature, and also at the pyloric opening, it presented a claret-coloured, velvety appearance; the œsophagus was also rather red in colour; and here a foot-note is added in the original notes, to the effect that the claret-coloured appearance observed in the stomach had most likely been produced by the action of croton oil that had been administered. In one the stomach is said to have contained what appeared to have been water and some kind of spirit; and in one the mucous membrane is said to have been red and velvety.

e. *The large intestine.*—In eight it is described as healthy. In one it is said to have been almost empty; the cæcum presented the same claret-coloured, velvety appearance observed in the stomach, with the addition of a number of pointed whitish papulæ. These papulæ were thinly scattered throughout the remaining length of the intestine, which in other respects was normal. In one the ascending and descending colon were of a

dark livid hue; solitary glands apparent, the walls thickened, the mucous membrane easily separated. In one the lower part of the ascending colon was adherent to the walls of the abdomen, apparently of old standing; the mucous membrane generally of a dark colour, otherwise healthy.

F. *The small intestine.*—In seven cases it is described as healthy. In one it is described as having been throughout of a remarkably pale colour, healthy, with the exception of a circumscribed ulcer of the size of a sixpence, evidently of old standing, about a foot from the ileo-cæcal valves. In one it is described as healthy; but the remark immediately follows, "all the organs remarkably hot." In one it was healthy to within about nine inches of the ileo-cæcal valve; between this point and the valve were found a number of small ulcers with raised margins. In one it is said that it was for the most part over-pale; some dark and red patches, from three to fifteen inches in length, in the lower part of the ileum.

G. *The liver.*—The state of this organ was thus noted:—In one it was congested, but natural in size, the gall-bladder distended with pale-coloured bile. In one it was large, presenting the nutmeg appearance. In two healthy. In one much congested, a few white patches on its surface. In one rather large, of a dark brownish-green colour, the gall-bladder filled with bile. In one it is stated to have been rather large, nutmeg in appearance, and gritty when cut. In one that it was not congested, some yellowish nodules and deposit apparent on the surface. In one the record states that it was much enlarged, presenting the nutmeg appearance, the gall-bladder filled with bile, and in one that it was much congested.

H. *The kidneys.*—These organs are said in three instances to have been healthy. In one rather large and lobulated, the structure apparently healthy. In one healthy but congested. In one not congested, the cortical substance pale and having an old appearance. In one congested.

I. *The spleen.*—The state of this organ as recorded was in four instances healthy. In one natural in size, rather firm. In one natural in size, firm, fleshy, and showing white points. In one congested.

17. Hepatitis.—Not more than four cases of this disease are

recorded in the 'Necrological Register.' The following were the appearances presented by them, viz.:

B. *Lungs.*—In one it is stated that some of the air-tubes were filled with frothy bloody mucus. Both lungs were highly congested, and there were some tubercles in the apex of the right. In one the smaller bronchiæ were filled with pus; apex of the left lung contained a cavity. In one slight adhesions are noted at the apex of the right lung; great congestion of posterior part of both lungs. In one the lungs are said to have been healthy; left pleura adherent posteriorly.

C. *The heart.*—In one the organ was natural, its surface covered with fat. In one it is described as atrophied, not half its natural size, mitral valves contracted. In one the report simply states that a fatty deposit existed on the surface.

D. *The stomach.*—In the only case in which the appearances of the organ are noted, it is said to have been small, but presented a natural appearance.

E. *The large intestine.*—In one case it is said to have been very much contracted, presenting close to the cæcum a patch of inflamed mucous membrane. The remainder of the gut was softened and thickened. In one it was pale in colour. In one ulceration was found in the cæcum and upper part of the colon, also in the remainder of the intestine, although not to so great a degree, and perforation in the sigmoid flexure was also found. (It is therefore evident that the fatal disease was in reality dysentery).

F. *The small intestine.*—In one case the record merely states, that the omentum was loaded with fat. In one the intestine was healthy. In one pale in colour; and in one, Peyer's patches were inflamed.

G. *The liver.*—Of the four cases recorded, we learn that in one this organ was found increased to double its natural size, of a bright red colour externally, but pale within, texture granular. In one it is described as slightly enlarged, fatty. In one the right lobe was congested and larger than natural, but not friable. In one it was much enlarged, very pale, a large abscess existing posteriorly, which had pierced the diaphragm, and entered the lung. I regret I cannot congratulate the recorder of this case upon the accuracy of his report; in it, he

does not allude to the fact of the lungs having been penetrated, while describing the appearances of these organs, although from what appears under the present heading, it is evident that they had been penetrated by hepatic abscess.

H. *The kidneys.*—It is reported that in one case these organs were double the natural size. In one very fatty. In one pale and anæmic; greatly enlarged, especially the left, in which two small calculi were found. In one they were enlarged and pale, cortical substance much increased in thickness.

I. *The spleen.*—In one it is said to have been four times its natural size, of a dark purple colour. In one of natural size, friable.

18. Cholera.—In the single fatal case of this disease recorded in the 'Necrological Register,' the appearances noted were as follow, viz.:

B. *The lungs.*—Healthy.

C. *The heart.*—Flabby and pale.

D. *The stomach.*—Slightly congested.

E. *The large intestine.*—Healthy.

F. *Small intestine.*—Very much diseased; solitary glands presented the appearance of the globules of boiled sago; Peyer's patches thickened. It is almost needless to remark, in reference to this brief record, that little valuable information is conveyed by it. We cannot but regret that in this and other instances greater care had not been bestowed by some of the medical officers upon the performance of post-mortem examinations.

19. Diarrhœa.—The post-mortem appearances in only nine of the fatal cases under this head are recorded, and even in these the record is far less complete than is desirable. The state of the various organs, so far as it has been reported, has been as follows, viz.:

A. *Brain.*—In only one instance, and it of choleraic diarrhœa, was it reported; in it an ounce and a half of serum existed at the base of the brain, and the ventricles were filled with the same.

B. *The lungs.*—The state of these organs has been recorded in four cases. In one they are said to have been healthy, with the exception of some congestion of their base. In one the anterior portion of both lungs was emphysematous, the posterior portion

congested and hepatized; some tubercles scattered here and there. In one there existed some adhesions of the right pleura, a small portion of the posterior part of the right lung was carnified; there was also congestion of the posterior portion of the left lung. In two they were partly healthy. In one old adhesions existed on the right side; the left contained tubercular matter scattered throughout its substance, beginning to soften. In one the lungs adhered to the walls of the chest, were hepatized and infiltrated with pus. In one instance both lungs are said to have been adherent; a cavity of old standing to have existed in the apex of the left, and tubercle scattered throughout its substance; both lungs were, moreover, engorged with a strawberry frothy fluid; and in one, the back and apex of the lungs were firmly adherent, fleshy, irregularly contracted, and containing in their substance some small cavities.

c. *The heart.*—In one instance of those recorded the pericardium was adherent to the heart's surface by old standing adhesions. In one the pericardium contained three ounces of serum; the heart itself healthy. In one the organ is simply said to have been "fatty." In one "healthy." In one "small." In one small; the right ventricle atrophied, firmly attached by adhesions to the pericardium. In one a colourless clot is recorded to have existed in the right ventricle. The left auriculo-ventricular valves to have been thickened, and fringed by small excrescences.

d. *The stomach.*—In one instance this viscus is reported to have been healthy. In one it is said that the mucous membrane was of an ash colour; the stomach containing dark, fetid fluid. In one the mucous membrane was remarkably pale; the great curvature studded with milk-white globules, emptying themselves on pressure, and becoming invisible.

e. *The large intestine.*—In one instance the mucous membrane was of a dark bluish colour, but without ulceration. In one the whole surface of the large intestine is described as diseased, roughened, in some parts of a dark ash colour, but generally reddened, and to have presented small circular ulcers near the anus. In one it presented symptoms of recent inflammation about four inches below the left curve of the colon, at which place a constriction existed, nearly obliterating the

passage. In one the cæcum was distended to twice its natural size; its coats thinned; the entire length of the intestine congested; a number of dark spots, larger than a pin's head, scattered throughout. In one the large intestine is simply said to have been inflamed. In one black elevations, with many small ulcers scattered throughout the colon, were found beneath; the former seemed to be formed by altered clots of blood, on removing which, a small ulcer was found beneath; rectum much thickened but not ulcerated. In one the large intestine was one mass of disease throughout; three perforations in the cæcum, one in the transverse colon, and one in the rectum: much deposit and thickening about these perforations. In one the mucous membrane of this intestine was of a black colour, adherent throughout by old adhesions.

F. *The small intestine.*—In one instance this intestine is recorded to have been healthy, with the exception of slight enlargement of the glands. In one, Peyer's patches were in a state of ulceration. In one, with the exception of its six lower feet, it was healthy; this lower part being of a brick-red colour. In one the lower portion was inflamed and ulcerated; the mucous membrane of an ash colour. In one the lower foot and a half was congested, otherwise healthy. In one the lower third of the intestine was highly inflamed; there were several patches, of purplish-red colour, embracing the whole intestine, and involving about a foot and a half of it. In one we learn that the intestine was healthy, with the exception of that portion near the large intestine, where it assumed a congested appearance. In one healthy to within three inches of the cæcum, where there was a deposit of white matter, presenting the appearance of boiled sago. In one several patches in the neighbourhood of the ileo-cæcal valve were prominent and thickened by deposit; the rest of the intestine was of a very pale colour.

G. *The liver.*—In two instances this organ is reported healthy. In one very much enlarged, presenting the nutmeg appearance. In one enormously enlarged, very pliable, of a buff colour, and fatty. In one hypertrophied. In one larger than natural, substance infiltrated with a light-coloured deposit. In one much enlarged, presented patches of a whiter colour than the

ordinary portion of the viscus. On section it was soft, and presented a deposit of white exudation, filling up the interlobular spaces. In one the liver was pale, with bright-coloured deposit diffused throughout.

H. *The kidneys.*—In two instances these organs were recorded healthy. In one large and fatty, the right having a nodular excrescence on its surface. In one the cortical substance was "rather narrow," otherwise healthy. In one they were pale, apparently from deposition of a whitish colour; cortical portion increased in thickness. In one case it is stated that they were very pale in colour; the cortical portion increased to nearly one inch in thickness; medullary portion also white in colour; and in one instance they are said to have been small, but healthy.

I. *The spleen.*—In one case the spleen was very much enlarged; In one enlarged, soft, and friable; darker than natural. In one healthy. In one enlarged and soft; and in one adherent over the whole of its surface.

20. DYSENTERIA ACUTA.—Of the fatal cases of this disease, only nine have been recorded in the 'Necrological Register.' The following is an abstract of the appearances noted in the various organs in the bodies of this number.

B. *The lungs.*—In three instances the lungs are reported healthy. In one the anterior portion of the right was adherent, and both lungs slightly congested. In one these organs are described as being peculiarly free from congestion. In one the lungs were much congested, both adherent firmly to the walls of the chest by old adhesions. In one they are said to have been healthy, rather bloodless. In one they were slightly congested, of a violet colour posteriorly, and in one healthy, except that they were slightly congested posteriorly.

C. *The heart.*—Among the instances in which the appearances presented by this organ are recorded, in one it is said to have been small and pale; a deposition of fat externally; valves healthy; pericardium contained two ounces of fluid; no trace of inflammation of this membrane. In one it was healthy, but flabby; the ventricles empty. In one pale, very flabby; the right ventricle containing a large colourless clot; the left containing some grumous blood. In one the heart was rather

pale, large, and flabby; half an ounce of fluid in the pericardium. In one the heart is described as healthy. In one rather small, healthy; some fluid blood in the ventricles. In one it was flabby; a large quantity of serum was found in the pericardium, and a deposit of fat on the surface of the heart itself. In one it is described as flabby, a large discoloured clot in the right ventricle; dark fluid blood in the left ventricle. In one it was pale and flabby.

D. *The stomach.*—Among the cases where the state of this viscus is recorded, we learn that in one there was slight redness of its mucous coats, and it contained a yellow, bilious fluid. In two it was healthy. In one rather reddened, but not from acute nor inflammatory action. In one it showed points and linear patches of a deep violaceous colour, and contained fluid much resembling bile in the gall-bladder.

E. *The large intestine.*—In one instance there were ulcers throughout the whole extent of this intestine, varying in size from a small pea to an inch in diameter, of every variety, and in every stage; many of them with thickened margins; although some were deep, none perforated the gut. In one the large intestine was adherent so firmly at the cæcum and sigmoid flexure, that it could not be separated without tearing; the whole intestine, internally and externally, was of a dark colour; sloughy ulcers in the caput cæcum, also in the sigmoid flexure and rectum. In one there existed slight adhesions of the large intestine to the neighbouring structures; cæcum and ascending colon showing a number of unhealthy sloughing ulcers; the remainder of the intestine of a dark colour, but not showing so many ulcers. In one the intestine was described as being one mass of disease throughout. In the cæcum and rectum the ulcers were very large, and the intestine much thickened. In one there was a very large deposit of white substance, great thickening of the gut, and masses of ulceration. In one the intestine was diseased throughout, especially about the cæcum and anus, where there was much thickening and ulceration. The remainder of the intestine had not so much ulceration, but was of a dull reddish *plum* colour. In one the intestine was described as presenting a mass of disease throughout, and as containing three large perforations; great

thickening of its coats by a deposit of a white substance externally; ulcers ragged and irregular, apparently in a chronic stage. In one it contained grumous bloody matter; its whole surface was inflamed and of a dark colour; the colon was considerably thickened; ulceration not so extensive as is usual in these cases; ulcers clear and well defined. And in one the intestine was thickened by interstitial deposit, and presented large patches of ulceration.

F. *The small intestine.*—In one case it showed traces of disease throughout its whole course; Peyer's patches and solitary glands were inflamed and enlarged. In one it is recorded that Peyer's glands were enlarged; that there was slight congestion in places, but that otherwise the gut was healthy. In one Peyer's patches are described as being distinct, but no congestion or inflammation of the intestine. In two cases the intestine is said to have been healthy. In one Peyer's patches, for about two feet from the ileo-colic valve were reddened, as was also "occasionally" the mucous membrane. In one the small intestine is described as healthy to within a few inches of the ileo-cæcal valve. In one it contained a large quantity of milky, white mucus; and in one it is stated that Peyer's patches were enlarged, thickened, more prominent than natural.

G. *The liver.*—Regarding the state of this viscus we learn from the records that in one instance it was enlarged; paler than natural; whitish patches on the surface, softer than the surrounding structure, and giving a greasy appearance. In one it was large, pale, not congested; the surface showing some yellow patches entering slightly into the substance; and in the substance was a slight variation of colour, caused by a similar deposition. In one the viscus is said to have been light-coloured. In one rather large, pale in colour. In one enlarged and pale from a whitish deposit; streaks of a white colour, which on section were soft, and had more deposit than other portions. In one the liver extended to a breadth of three inches below the ribs and pit of the stomach. It was studded, especially near its surface, with small abscesses. In one the organ was much enlarged, adherent anteriorly, and generally pale. It moreover contained four abscesses, in each of which there were about ten ounces of pus, of a most offensive odour. Streaks of white

deposit in the substance were also observable in a state of softening. In one the liver was enlarged; a bright-coloured, diffused deposit throughout its substance; the gall-bladder full of dark bile. In one it is described as "enlarged and globular" (?) of a pale colour, the result of a deposition of white matter, obliterating entirely the usual lobular appearance.

H. *The kidneys.*—In one instance they are described as paler than natural; the cortical substance increased in thickness (half an inch); the capsule easily separated. In one, tolerably healthy, the cortical substance pale, from infiltration of a light-coloured deposit. In one they are said to have been healthy, but light coloured. In one large, "pale and white;" cortical substance much increased in thickness. In one they were rather dark-coloured; a calculus was found in the right, otherwise they were healthy. In one they were very large, pale, with a whitish deposit, like that in the liver. In one, rather large, a light-coloured deposit of the same description in their substance; and in one they were slightly congested, cortical substance much thickened, its substance pale.

I. *The spleen.*—This organ was in one instance smaller than natural, and of firmer texture. In one adherent in part by old adhesions, natural in size, hard and gritty when cut. In one it was rather small, firm, and fleshy. In one "remarkably small." In one slightly enlarged. In one of natural size, over-firm, studded with white spots. In one it was described as rather firm; and in one as enlarged, soft.

21. DYSENTERIA CHRONICA.—A record of post-mortem appearances has been preserved in fifteen fatal cases of this disease. The following is an abstract of the appearances described, viz.:

B. *The lungs.*—The state of these organs is noted in eleven cases; of these we learn that in one the right lung was slightly congested; the right pleura inflamed and adherent. In one the posterior part of the lungs was of a violet colour, partly consolidated and easily broken down. In three healthy. In one the left lung was adherent at the apex; tubercular in its substance; in a state of softening, with miliary tubercle throughout the remainder of the lung; the right congested. In one both were healthy anteriorly, posteriorly congested, and containing small pneumonic patches. In one healthy, a little darkish in

colour. In one the upper part of the right lung was consolidated, from tubercular adhesions of the pleura; tubercle in the upper lobe of the left lung, but isolated. In one the posterior part of the left lung was of a claret colour, containing much serum; the pleural cavity of the right side containing fluid; the lung at the apex adherent, partly collapsed. In one the left lung was consolidated posteriorly: patches of tubercle scattered through it; the right firmly adherent, chalky deposit with tubercle found in its apex.

c. *The heart.*—Of the eleven cases in which the state of this organ was recorded; in one it is described as flabby. In one rather flabby; right ventricle distended by a firm clot. In one healthy. In one the pericardium contained ten ounces of fluid; heart enlarged and fatty; valves healthy. In one the organ was smaller than usual. In one it is simply said to have been "small." In one fatty and atrophied. In one small, atrophied, nearly empty. In one small, atrophied, flabby. In one flabby; ventricles empty. In one pale and atrophied, with a deposit of fat externally.

d. *The stomach.*—A very imperfect record of the state of this viscus is unfortunately preserved, all that we learn in regard to it, being that in one instance its veins were congested, and in two it was healthy.

e. *The large intestine.*—In one case the state of this intestine was described as "friable." In one as slightly adherent; the coats friable, not thickened; some small, irregular ulcers. In one there was ulceration in different stages in the cæcum and transverse colon; the remainder of the gut thickened and contracted; the mucous membrane thickened and diseased looking, as if "raw" on its surface. In one the colon was diseased throughout, with small and irregular-shaped ulcers. In one there was general redness and inflammatory state of the mucous membrane, which was irregularly raised into "islands." In one, ulcers of old standing were found in the commencement of the large intestine. In one this intestine is recorded as having been in a highly diseased condition, the mucous membrane near the cæcum almost destroyed by ulceration. In one the gut was rather "friable," contracted except at caput cæcum; no ulceration, but mucous membrane rough, thickened, and of a

dull colour. In one there were patches of ulceration and inflammation. In one the intestine was distended to about the centre of the transverse colon, from which point it was rather contracted; no congestion; the mucous membrane generally healthy. In one it was excessively ulcerated from the cæcum to the rectum. In one the mucous membrane of the ascending and transverse colon were of a pale colour, that of the descending colon became dark in colour, with reddish spots and blue patches, which contained small ulcers. In one there were large patches covered by a black deposit; or rather the mucous membrane was changed in colour, and presented several ulcers with defined edges.

F. *The small intestine.*—In one instance we are informed by the records that this intestine was "friable." Peyer's patches visible near the ileo-cæcal valve. In one a few papulæ were apparent about six feet from the pylorus. In one a portion of the ileum was bound down by adhesions; the intestines healthy throughout. In one the small intestine was reported healthy, except the lower part of the ileum, which was slightly red, and contained one small ulcer. In one the record simply states that "the lower part of the ileum was of a purplish colour." In one Peyer's glands were vascular and prominent. In one the lower three feet of the ileum were highly diseased (ulcerated), and about a quart of serum in the cavity of the peritoneum. In one the intestine was healthy, except about seven inches of the lower part of the ileum, which was red and inflamed. In one there were large patches of inflammation, and others of ulceration. In one the intestine was somewhat pinkish in colour; papulæ on the mucous surface prominent. In one there were found some small irregular ulcers towards the termination of the ileum. In one the intestine was externally of an ashy colour, two slight patches of red about three feet from the ileo-cæcal valve; also a small ulcer. In one the record states that Peyer's patches were inflamed, with softening.

G. *The liver.*—In thirteen cases in which the condition of this organ has been recorded, we find it to have been as follows, viz.:—In one slightly enlarged and cirrhosed. In one there was a large abscess in the upper part of the right lobe. In one it was rather enlarged, gritty in cutting, presented a granular

appearance. In two places, dense white tissue surrounded the ducts, and the gall-bladder was full of grumous bile. In one the liver is recorded as somewhat enlarged, and having a granular appearence, from a deposit of yellow matter around a dark, liver-like speck. In one the liver was adherent, enlarged, of a dark colour, much congested. In one enlarged, the nutmeg appearance well marked. In one healthy. In one it is simply stated to have been smaller than usual. In one enlarged, with a nutmeg appearance. In one not enlarged, firm, fleshy. In one enlarged, otherwise healthy. In one enlarged, pale, and granular; and in one slightly enlarged, fatty.

H. *The kidneys.*—The condition of these organs where recorded was as follow, viz.:—In one they were somewhat enlarged, pale, granular. In one healthy. In one healthy, but small. In one the cortical portion was rather narrow; otherwise healthy. In one the cortical portion is said to have been very much increased in thickness, and to have been pale in colour. In one they were enlarged, over-firm, gritty to the knife, somewhat granular. In one they were normal. In one the cortical portion was very narrow, the left kidney enlarged, and in one they are described as very pale in colour; the cortical portion half an inch in thickness.

I. *The spleen.*—As regards the state of this organ, we learn that in the eight cases where information is available, it was as follows, viz.:—In two cases it is described as being "natural." In one not enlarged, firm, and fleshy. In one of natural size, adherent to the pancreas. In one "healthy." In one small and fleshy. In one small, healthy; and in one it was half as large again as natural, of a dark colour.

In order to draw a comparison between the post-mortem appearances observable in the bodies of persons who have died of dysentery in Bengal, and of fatal cases of that disease as it occurred at Tein-tsin, the following table is given. In reference to it, it is only necessary to state that in as far as it concerns India, the information has been obtained from Martin's work on 'Tropical Climates,' pages 527—529; as regards Tein-tsin, from the Necrological Register, kept in the General Hospital, there.

	Dysentery of Bengal.				Dysentery at Tein-tsin.			
	Acute.		Chronic.		Acute.		Chronic.	
	Observations in cases of 160 Europeans.	Or rate per cent. of cases.	Observations in cases of 55 Europeans.	Or rate per cent. of cases.	Observations in cases of 9 British.	Or rate per cent. of cases.	Observations in cases of 13 British.	Or rate per cent. of cases.
Liver contained abscess in cases	21	13·12	6	10·90	2	22·22	1	7·69
Liver enlarged in ...	40	25·00	5	9·09	8	88·88	7	53·84
Liver gorged and turgid	4	2·50	—	—	—	—	1	7·69
Liver small in	7	4·37	8	14·54	—	—	1	7·69
Liver pale in	26	16·25	11	20·00	7	77·77	1	7·69
Liver granular in ...	22	13·75	—	—	—	—	5	38·46
Liver softened in ...	12	7·50	1	1·85	1	11·11	1	7·69
Liver indurated in...	5	3·12	4	7·27	—	—	2	15·38
Liver contained cicatrices in.....	3	1·87	1	1·85	—	—	—	—
Intestines.								
Large intestines ulcerated in.....	160	100·00	50	90·90	9	100·00	9	69·22
Large intestines perforated in ...	8	5·00	1	1·85	1	11·11	Not noted.	
Ileo-cæcal valve ulcerated and destroyed in	3	1·87	—	—	—	—	—	—

22. Chronic indigestion.—One case appears in the necrological register under this head. The following were the appearances noted.

B. *Lungs.*—Healthy. C. *Heart.*—Healthy.

D. *The stomach* was here and there slightly reddened; firm and like rugæ.

E. *Large intestine.*—Was reddened throughout; mucous membranes thickened and ulcerated; "apparently chronic."

F. *Small intestine.*—Mesenteric glands enlarged; small intestine much congested; ileum vascular throughout, especially the patches of glands.

G. *The liver.*—Enlarged, granular, and of a yellowish colour.

H. *The kidneys* were "of a pale colour."

I. *The spleen.*—Natural in size; slightly adherent to the stomach.

23. Phlegmon.—One fatal case from this cause is recorded. In it the appearances were as under noted, viz.:—

B. *The lungs.*—The right adherent at the apex; both lungs otherwise healthy.

C. *The heart.*—Enlarged; ventricles hypertrophied.

D. *Stomach;* E, *Large intestine;* F, *Small intestine*—all healthy. G. *Liver.*—Enlarged; some appearance of nutmeg degeneration; no deposition of pus.

H. *Kidneys;* I, *Spleen*—both healthy.

A note to the record of this case states that "pus was found between the astragalus and os calcis. The posterior part of the latter denuded of periosteum. Soft tissues around it had a sloughy appearance. The foot and leg discoloured; an opening on each side of the ankle-joint; two on the leg."

CHAPTER XII.

HOSPITALS IN CHINA.

A hospital for sick Chinese—Some remarks on diseases.—Hydrophobia—Tetanus—Our prisoners and those of the Chinese—Hospitals and Missions.

EARLY in January, a hospital was opened for the treatment of sick Chinese. It was considered that much good was likely to arise from an establishment of this nature, not only in the benefits conferred directly by it upon those suffering from bodily sickness or from external injuries, but in its more distant and remote effects. It was considered that the natives would be brought through this hospital to see that although our force was here by right of military possession, yet now that actual warfare had ceased, we were solicitous to confer upon them some of the benefits of European science; and it was also believed that by intercourse with those of us who took an interest in the institution, they might be brought to entertain more favorable opinions of us than they have up to the present time been taught by their mandarins and high officials to do. The propriety of establishing this hospital was first suggested by the writer of these pages; but beyond this he had little, if anything, to do with the very great success that attended it, than had any of the others who took a direct interest in it. No sooner was the suggestion made in regard to the formation of the hospital, than it was energetically taken up by several officers of the force. A considerable sum of money was speedily raised, and one of the regimental medical officers having agreed to take professional charge, the establishment was very soon in full operation.

Its reputation extended far and wide with a rapidity that was remarkable. Large numbers of men, not only from the city, but

from considerable distances around, flocked to it for treatment on account of various diseases of the eyes, to which, as already observed, great numbers are subject. It was not long before women also began to come in large numbers, and it was speedily apparent that the benefits conferred by British surgery upon the applicants were fully appreciated by them. From the very first, the native magistrates took no actual notice of it. They were probably unwilling, for reasons of their own, to show direct opposition to it just at present; and so great were the benefits obtained by very many of the applicants, that they would probably not have allowed themselves to be deterred from continuing their own attendance at it, or recommending it to their friends and acquaintances, unless under direct coercion. Some very remarkable characteristics of the people of the north of China became revealed during my connexion with this hospital, and some other particulars also appeared which may not be deemed undeserving of notice in a volume such as this.

Surgery was evidently the branch of the profession which was most appreciated by our patients, and in which they placed the greatest confidence. The science of medicine, as practised by Europeans, they considered far inferior to the system followed by their own practitioners. According to them, all the ills that flesh is heir to owe their origin to one of these causes; namely, to the power of "the dragon," or to the "Yin, and the Yan"—these terms representing according to the doctrine of the followers of "reason," the male and female principles of Creation. Their treatment is in accordance with these extraordinary doctrines, charms, incantations, and the violent local remedies elsewhere described constitute the chief remedies in use by them; and accordingly our system of medicine, which recognises none of these, is, in their estimation, founded upon altogether false principles. But they are not so very bigoted as to believe that any amount of incantation will set a broken limb, or any charm be so effectual in the removal of a diseased mass from the body or limbs as is a scalpel in the hands of a British surgeon.

The manner in which they bear the pain of an operation is perfectly astounding. It was customary to administer chloroform to some who were about to undergo some of the more

extensive operations, and the wonderful effects of this most wonderful agent at once attracted the attention and admiration of all who witnessed them; while the accounts of it became, after having been retailed by two or three persons in succession, so transcendingly wonderful as to outdo, if that were in their opinion possible, the power of the dragon itself.

A large proportion of those upon whom operations were performed had no chloroform given to them, and these, unless when the operation was more than usually protracted, neither cried nor winced; some did not even clench their hands or teeth, but lay upon the table perfectly motionless, while their muscles were being cut by the knife, and their bones divided by saw, forceps, or gouge.

That this may be in some degree attributable to the circumstance of the sensibility of the nervous system being less acute in the Chinese than in the European is quite probable. That this is so, is mere matter of speculation; but were it an actual fact it would be insufficient to account for the great degree to which indifference of pain is observable among them; a good deal is, therefore, no doubt due to moral training. From their earliest youth the Chinese are taught indifference to bodily suffering, or to life itself. Personal cruelty is instilled into their nature from their infancy; and so effectually, that I have seen by-standers and relations of a subject of operation smiling and joking as its details were being proceeded with, and I have seen a person just removed from the operating table, and placed for the time being upon a bed in the immediate vicinity, smile at, and appear to enjoy the agonies of his successor, as the knife was cutting its way through, and the blood trickling from his quivering flesh.

And yet, notwithstanding these characteristics, the Chinese are far from devoid of gratitude. Some have expressed themselves as deeply indebted to the foreign surgeons for having restored them in health to those dependent upon them for support; neither are they wanting in kindness and attention to each other during sickness. Brothers have been seen performing offices to one another, when prostrated by sickness, such as I must say I have never seen in what are called civilised countries. If therefore there are very many objectionable points in the character of the Chinaman, even he has his redeeming ones.

Shortly after this hospital had been established, the fact became very apparent that the male patients had for some time been behaving with great rudeness towards the inmates of the opposite sex, and this to so great a degree, that a great number of the latter had left, while some who remained were in tears, and busily engaged in preparations to make their exit also. The fact now transpired that the men are at a loss to comprehend the motives which induce us to apportion to the women the best room in the hospital as a ward. They did not scruple to inform us that they *wanted* the room in which the former were accommodated; and quietly intimated that "any place was good enough for them," *i. e.*, the women, adding, as if in derision—"they're only women." We had before this met with much to convince us that the female sex hold among the Chinese a most degraded position. Here was an additional confirmation of the discreditable fact.

Those of our patients who had been operated upon, considered that they therefore had a kind of prescriptive right to consider themselves as of or belonging to the hospital. In the afternoons and early evenings, a number of these, bringing their friends along with them, were wont to assemble in the court-yard of the hospital, over which a screen of matting had been placed, the better to protect them from the glare and heat of the sun.

Under this canopy a table, some chairs, stools, and forms were placed by the caretaker of the hospital; each visitor produced the tiny pipe, which is the Chinaman's inseparable companion; a number of small teacups were placed upon the table, the large teakettle, which is ever ready, was passed round, and thus, smoking mild tobacco, and drinking still milder tea, these men would spend many an hour discussing such subjects as were most interesting to them; and let us fondly hope they did not speak in such terms of hatred to the "barbarian" as they had been accustomed until lately to do.

Upon the whole, this establishment was a great "success." The numbers of natives who had derived benefit from it might be reckoned by thousands, and all these, with a very few exceptions, had expressed themselves as most grateful for the benefits bestowed upon them by the institution.

As a matter of course, some opportunities occurred of seeing

the foot of a Chinese woman that had been deformed by the system of pressure, to which by long custom they are subjected, and a more unpleasant object to look at it is not easy to conceive. The fair proportions of a foot, according to our ideas, are completely destroyed. It looks what it is, a hideous deformed mass. The four smaller toes are violently pressed under the sole, the natural arch of the foot, artificially raised, so that the chief mass of the foot is thrown into the position usually occupied by the instep and ankle. The person is thus forced to walk upon no other support than the point of the heel, and tip of the great toe. The leg is in many instances wasted, but certainly not so in all; the "ankle," in its English sense, is "nowhere;" and to our ideas, the "golden lily"—signifying thereby, the artificially cramped foot—is not only hideous in itself, but gives to its fair *wearers* the character of gait we might expect to find in a satyr.

It would be out of place here to describe at length cases that came under notice in this hospital. One case may, however, it is believed be given, as it not only illustrates a very frightful malady which fortunately is of but rare occurrence, but it also illustrates a danger which ought to be had in mind by fanciers of the hideous herd of curs called "Pekin dogs," that are likely to become fashionable pets in England.

Towards the latter end of the month of August, a strong Chinaman was brought to hospital suffering from hydrophobia. He was one of three who had been bitten by a small Pekin dog two months ago. The other two men died from hydrophobia five days after the accident. He was only seized with symptoms of the disease the day before admission, his first indication of the frightful malady having been a degree of difficulty in swallowing, which he experienced on attempting in the early morning to take a draught of water. The marks of the dog's teeth, although now completely healed up, are still apparent upon the thumb; neither pain nor uneasiness was complained of in it. During the forenoon he was seized with most severe tetanic spasms at the pit of the stomach; the sight, or even the very thought of water would thenceforward bring these spasms on, and the faintest current of air across him would throw him into convulsions. The expression of his face was painfully anxious; the eyes were staring wild; yet at this time his intellect was

unimpaired. By evening the disease had advanced to a degree that was terrible to observe. He had shortly before started away from the hospital, running madly down the street. During his wild career, he had *bitten* on the hand two coolies who had attempted to oppose him, and then, as if overcome by excitement, had fallen down convulsed. While lying upon the ground he was securely bound by cords, and having been so, was brought back to hospital, where, when about 10 o'clock p.m. he was next seen, he still lay firmly bound. An expression of maniacal excitement was on the face, the corners of the mouth were becoming clogged with mucus; his lower jaw moved upwards and downwards as if it were in the act of biting; at intervals of a few seconds or minutes he exclaimed in Chinese, "flee, flee," and instantly afterwards losing self-control, violent spasms succeeded, during the continuance of which he abused vociferously imaginary enemies, tried to clutch with his mouth at a small pillow that had been placed under his head as he lay upon the flags in the open courtyard, for all feared to lay hold of him with a view of carrying him into a ward. Seeing the fearful agony which he suffered, it was suggested that a piece of ice put into his mouth might be grateful to him. The suggestion was made in Chinese, and the very mention of the word seemed to bring on a convulsion even more violent than any that had occurred. By the force of the muscular spasm, and notwithstanding that his hands were firmly bound together behind his back, and his heels to them, he was thrown over and over several times until he literally rolled against the wall; his progress was thus arrested, but he repeatedly beat his head with violence against it, until after a little this fearful spasm seemed to subside. The intervals between these spasms were evidently becoming shorter and shorter, their violence greater and greater; in the brief intervals the mind was still clear, but the face now retained its expression of maniacal excitement.

On the succeeding morning the violence of the spasms had much decreased, consciousness was failing, his breathing was spasmodic, and performed with evident difficulty; his jaws were firmly held together, as if under the power of tetanus, and during the forenoon he sank, death taking place as if from exhaustion of the vital powers.

One other case deserves to be recorded, namely one of traumatic tetanus in which death did not occur. A powerful native, about forty years of age, sustained a compound comminuted fracture of the great toe and the corresponding metatarsal bone, the wheel of a native cart that was heavily laden having gone over it. Amputation of the injured toe was performed, and the fragments of bone carefully removed. Shortly afterwards, tetanus of a severe nature set in, the attacks being at first confined to the injured side, but afterwards implicating both.

Dr. Lamprey, who had medical charge of the hospital, administered and tried one after the other all the ordinary remedies in such cases, but all with the usual want of success. The paroxysms had continued several days, and the powers of the patient were evidently becoming exhausted. He was then placed under chloroform; the wound opened afresh, a search instituted for spiculæ; one being found, it was removed, and on the patient recovering from the anæsthesia, he was induced to smoke opium, although he at first entertained the greatest horror of the drug, having never indulged in it. After a little, the usual effect was produced. He became under the influence of the narcotic, and remained unconscious for a time, as opium smokers do; on partial restoration of consciousness, the attacks returned; again the fumes of opium were administered, and so on during a period which, to the best of my recollection—for I have mislaid my notes—was about twenty days. The interesting part of the whole is, that the violence of the paroxysms gradually decreased until they ceased to recur; the peculiar tension of the muscles of the face, jaws, and neck, however, continued even for some time longer, and so great had become the attachment of the man to the opium pipe, that considerable difficulty and resolution were needed before he was able to break himself of the habit.

Among the many who were treated in this hospital for natives were some Tartar soldiers who, having been more or less severely wounded at some of the actions during the campaign, had been brought on with the force, at the instance of Sir Hope Grant, K.C.B. They had all been so seriously injured by bullets that they must necessarily have died had it not been for the great care they received from the English surgeons during a period

of not less than six months. They were permitted to have every comfort in the general hospital that was allowed to our own sick, and afterwards, when transferred to that for the treatment of sick natives, all the privileges and comforts they had previously enjoyed were continued to them. They had ample bedding, warm clothing, rations to eat, such as were given to the soldiers; extras, especially wine and beer, were given to them with a liberal hand, and as no caste prejudices stood between them and their enjoyment, they soon obtained as great a relish for "Bass" and "Allsop" as if they had been natural born Saxons. At last they recovered so far from their injuries as to be considered in a fit state to be restored to their families. It was announced to them that this was the case, but the intimation was not received with the delight that might have been expected; they evidently relished the regimen they received at the hands of the barbarians more than they did the anticipation of once again having to "rough it" in Tartary and Mangolia. About the middle of April, however, they were despatched to Pekin. A liberal sum of money was raised by subscription, and divided among them, and it was intended that these men should be handed over to the native authorities with some degree of formality, in order that they might have an opportunity of contrasting our manner of treating prisoners taken during war with that adopted by their own people towards our unfortunate fellow-countrymen who fell into their hands.

As regards the Tartar soldiers, however, it speedily became apparent that the Chinese authorities thought very differently from what those of England would have done under similar circumstances. They refused to receive the men, or to have anything to do with them; the men had fallen in battle, they said, and therefore had by them been considered to be dead; officially dead, therefore, they were considered to be; and the Chinese system of "red tape" had probably no precedent for dead men coming to life again, and being retaken upon their "returns."

Let us now briefly contrast the treatment which these prisoners received at our hands with that by the Chinese authorities of some of our troops who fell into their hands; and let me transcribe for this purpose some notes taken by me when

the impressions made by inspecting the effects of the latter were fresh and vivid. In the month of January, while visiting the hospital of the Seikh troops, I had an opportunity of examining the nature of the injuries sustained by two out of three of these men, who, having been bound by cords, and thrown into prison, are still unfit for the performance of their duty as soldiers.

I personally examined the wrists and ankles of both. On both these parts, but more especially upon the wrists, were large cicatrices; those upon the wrists of one of the men were at least two inches broad, and even above this frightful mark, was a second scar, although of considerably smaller dimensions; the use of the hand was in consequence very seriously impaired.

I questioned these men regarding the cruel treatment to which they had been subjected during their captivity. For the first eight days after their capture, neither food nor drink was, according to their own account, given to them. For the first four days their sufferings were intense; the Chinese having bound them immediately after their capture, dropped water upon the cords around their wrists in order to tighten them still more. After the fourth day the acuteness of the sufferings produced by these cords diminished, but maggots having become developed in the sores that had now formed, these loathsome creatures began to creep all over their person. The particular manner in which they were secured was this: their hands were, in the first instance, crossed behind their backs, and in this position tightly bound with cords; their legs were then bent backward at the the knees; their ankles then secured to their wrists; they were then thrown upon their faces, and thus left.

After the eighth day food was regularly given to them, and placed in their mouths by means of chopsticks; but they state that so early as the fourth day, some of the British who were with them subjected to these tortures, became first delirious, then unconscious, and finally were by death released from their terrible sufferings.

About the same time, having visited the French hospital, I was permitted to examine one of the soldiers there whose injuries, inflicted while he was a prisoner of the Chinese, were

of a nature precisely similar to those observed in the Seikhs; and the account given by him of the tortures to which he was subjected, tallied in all respects with that given by our own black troops, as now related.

As a matter of history connected with the miserable fate of our countrymen who, during the late campaign, fell into the hands of the Chinese, the following account is transcribed from the medical report of the regiment of Fane's Horse. According to this report, "nine were all who returned of the number taken by treachery on the 18th of September; one European officer, the adjutant, and eight men, having died from ill treatment and starvation."

The narrative of the men who escaped is full of horrible details of barbarous treatment. It seems that on the second day of their capture, the prisoners had their hands bound by cords behind their backs, and these attached to their feet, which had likewise been bound; they were thus huddled four or five together into carts capable of containing conveniently but two, and these driven at a rapid pace over very rough roads through hills during the whole of the night. On arrival in the morning at some of the Chinese fortified forts, the prisoners were thrown, bound as they were, into small, filthy rooms, and then had heavy chains placed upon their necks.

For the first few days, little or no food was given to them. Scalding hot water was offered to them as drink, and cold water poured upon the cords around their wrists to tighten them. They were left amidst all the filth that accumulated around them.

The tightened ends of the limbs soon mortified, and worms fast generating in myriads crawled about their bodies without the prisoners having the power to get rid of them, or hindering them from entering their mouths, nose, ears, &c., and on their requesting assistance from their attendants, asking for food or drink, they were maltreated by kicks and blows.

Here I have given the account by one of the sufferers himself; I have given the official account of the sufferings of one portion of the prisoners, and leave them to produce their own impressions upon the reader.

Among the "distinguished visitors" to this hospital was the

Roman Catholic Bishop of Pekin, whose personal history is one of great interest. The Roman Catholic cathedral, which has existed at that city during upwards of 200 years, was, by orders of the Chinese government, closed about twenty-seven years ago, since which time persecution has been enforced there against Christians. The bishop has, notwithstanding the dangers by which he was surrounded, remained in the capital receiving protection from his own proselytes; and on the city being occupied by the allies, he had the great satisfaction of reopening, in person and with great solemnity, the cathedral that had during so long a time been closed. The treaty now allows freedom of opinion in matters of religion to all nations.

The worthy old man has been summoned to Paris, whither he is now travelling; and has so long worn the dress of the Chinese, and spoken their language, that he looks now like one of themselves. His features of course indicate to the careful observer their western character; and the golden chain around his neck, from which is suspended a crucifix, indicates the sacred nature of his vocation.

In concluding this brief chapter, it may not be altogether out of place, if I add one or two remarks in regard to hospitals in connection with mission schemes. It is almost needless for me to state in this place, that the one established by us had no connection with any religious sect or denomination. It mattered not to us what was the particular belief or superstition of our patients. It was sufficient to us that they were sick, or suffering from some bodily injury. Some missionaries did, I believe, find their way into the establishment, and it is for us to hope that their visits were not unattended by success. From what I did observe, however, at this hospital, and learned from some of our countrymen on the spot, who were able to converse in the native language, I am convinced that the establishment of hospitals for the treatment of sick in China, as a means of converting the natives of that country to Christianity is not calculated to be successful.

By means of our surgery, as by the introduction of any of our other sciences, we pave the way for the introduction of our philosophy and religion; but to endeavour to bring about the conversion of a native while he is helpless, prostrated by disease or

accident, for the treatment of which alone he considers that he was brought to hospital, looks in his eyes and in those of his countrymen, very much like taking an advantage of him. I am fully aware how delicate is the nature of the question upon which I now touch. Every man has a right to hold his own opinions upon it, as upon all others; and while I express mine, those of my readers who differ from me are no doubt quite justified in doing so.

CHAPTER XIII.

NAGASAKI.

Remarks on Nagasaki, in regard to its eligibility as a Sanitarium for our troops employed in China.

No view that ever I remember to have seen was at the time of witnessing it so delightful, or has left upon my mind so pleasant a recollection as that obtained from the deck of her Majesty's gunboat, "Slaney," with her head down stream, and steam at full power, as we took through binoculars a last fond look at that most filthy of filthy Chinese cities, Tein-tsin.

The morning of our departure (10th October) was in every way propitious; the atmosphere cool enough to be agreeable, and the sky sufficiently cloudy to permit us to keep our eyes open without risk of being dazzled. The temperature in the open air had, during the previous night, descended to 45° Fahr. It was at 8 a.m. 55°, the wet bulb of the thermometer indicating at the same time 49°; thus the initiated in matters meteorological will understand that the morning was not only "balmy" but bracing.

To start "homeward bound" from a hateful place is a luxury too great to be of frequent occurrence in the career of many people either in the public service or out of it. Places that merit such an epithet seldom, alas! permit the sojourner in them to take his departure in a state of health such as to render him capable of enjoying anything—even the act of leaving; the more, therefore, ought the event to be appreciated and enjoyed by those who have had the rare good fortune to bring away with them an even tolerably unimpaired constitution.

This was happily the case with the majority of the party on board, of which I formed one; yet a strange dread seemed to take possession of us that something or other might happen to oblige us to return to the place which had already begun to become indistinct in the distance: telegraphs we knew there were none: all was peace at the capital, or if not, report had declared that the call there was "Peace, peace." No smoke or flame shot up into the air from Tein-tsin to indicate that the city had suddenly become a blaze; there was, in fact, nothing to justify the dread we all experienced. There it was, nevertheless; the fact was, our luck was almost too good to be at once realised: we had no little difficulty in getting ourselves fully to understand that we were really and unmistakeably off.

As if to tamper with our fears, the "Slaney" insisted once or twice in running straight into and becoming for a time embedded in the soft, muddy banks at the more tortuous parts of that peculiarly tortuous river, the Peiho. This was not the fault of the "Slaney;" the river was narrow, the stream always strong, and the tide running down literally like a sluice. The detention on these occasions was only for a few minutes; but during these few minutes a cold thrill came over us, as we thought of the bare possibility that we might become fairly grounded, and have to go back again by land to Tein-tsin.

But no such horrible consummation awaited us. On the contrary, our passage down the river was most propitious, and at a not very late hour the same evening we found ourselves on board H.M.S. "Vulcan," which vessel lay at anchor off the now famous Taku forts.

A few days were allowed to pass before the "Vulcan" was quite ready to commence her journey. At last, on the morning of the 14th, steam was got up, the screw was in motion, the anchor raised, and our voyage fairly begun. I got up to see the vessel start, and take a look at the neighbourhood of a place I have characterised as the most hated of all in which it has been my lot to serve.

Much to the pleasure of the party on board the "Vulcan," the stock of coals in possession was declared too small to take the vessel on to Hong Kong; it therefore became necessary to put in at one of the nearest ports of Japan, in order to replenish our

stock of fuel; for among the many valuable mineral productions of Japan, coal of excellent quality is not the least important. Nagasaki was the most convenient port for us to touch at, and towards Nagasaki was the "Vulcan" steered.

The weather with which we were favored was in every way charming, the temperature such that we were able to enjoy being on deck during the greater part of the day; not that there was much for us to look at, for during our passage across to Japan no vessel save our own was visible; trade has not yet dotted the ocean in these regions with ships, as is the case over the greater part of the world, neither did any necessity exist for a large naval fleet to scour these waters. Thus, as we sped along, there was in reality very little to attract our attention; yet all was not barren.

On the 17th of the month, when about midway between Fou Chansoo, on the coast of China, and the point of the Corea, noted on charts as Basil's Bay, we were not a little surprised to find the vessel passing through lines of what was evidently a species of gulf weed. In general appearance it was but slightly different from Sargossa weed; like it, it occurred in lines which stretched at intervals along the surface of the sea in a direction nearly north and south. These lines were not continuous; they were frequently interrupted, and the intervals between the different ones were much greater than what is the case in the neighbourhood of the western islands.

The paucity of birds, either on the coast or inland in China, has already been remarked upon. From the time that we left the Gulf of Pecheli, until we reached Japan, except on one occasion, we saw none of the feathered tribes; this occasion happened on the 19th, when we were off the island of Quelpart: a brisk gale had shortly before set in, the force of which had no doubt swept some of the land birds to greater or smaller distance from the shore: one of these, a kite, crossed our course; it had in all probability been blown away, either from Japan or the southern part of the Corea, and from the point at which we saw the creature, not a less distance than three hundred miles lay between it and the nearest point of land in the direction in which it was proceeding; that is, the neighbourhood of the mouth of the Yangtse Kiang.

Continuing our progress, we passed in succession within sight of the rocks called Maek Zema and the "Asses' Ears;" for be it observed, there are asses' ears in the neighbourhood of Japan, as well as near Hong Kong. During the 22nd we passed close to the Pallas rocks, and early in the afternoon of the same date were abreast of Cape Gotto. The land ahead did not become visible until late in the evening; the night was fortunately clear; thus Captain Strode was able to "make the harbour" without waiting for daylight. Continuing, therefore, to steam onwards, we entered one of the most exquisite inlets to be found throughout the world, and shortly after midnight anchored off the Town of Nagasaki, at a distance of not more than a mile and a half from the landing-place. The town was distinctly visible in the bright moonlight, which was everywhere reflected from the light-grey roofs of the houses. A long straight line of lights along the shore, and so close to the water as to be reflected from its surface, indicated the position of the foreign settlement; for although this port has been but very recently opened, many of the principal mercantile establishments in China have either established branch houses here, or are employed in so doing.

Around us on every side a succession of hills of various sizes reared their conical summits, some to a height of 800, others to 1400 feet; the harbour was, in fact, completely land-locked; its smooth, glass-like surface literally glistened under the almost cloudless sky, and would have reminded us of a highland lake, were it not for the circumstance that it was dotted by several vessels of different sizes.

We were all aware that our stay must be very limited. Determined, therefore, to make the most of our time, we were on the move early in the morning, that is, we were on deck with the first dawn of day; a heavy fog at that hour hung thick upon the harbour, rendering it impossible for us to see further than a very few yards on either side of where we lay at anchor. Gradually the morning became more and more clear; then we could see that the rays of the early sun were struggling to penetrate the curtain of vapour in which we were enveloped, and, after a little, as it became dissipated by the increasing warmth, one portion after another of it disappeared, revealing,

as it dissolved, some successive pieces of scenery, each more beautiful than another, until, as the whole cleared off, a panorama was seen to stretch around us, so magnificent, so exquisite, as far to surpass anything we had ever before beheld. It was, indeed, difficult to say whether the scene was most beautiful as viewed in the pale moonlight, as when we first beheld it, or now, as revealed by the gradually dispelled mist. Altogether, whether as seen by night or by day, it seemed to us as if in natural loveliness it could scarcely be equalled, but certainly nowhere surpassed. We had heard so much about the peculiar loveliness of the harbour of Nagasaki, that we were prepared to be lost in admiration of it, but it most assuredly had not entered into our minds to conceive the remarkable succession of beauties that now everywhere riveted our attention.

For the sake of continuity in my brief narrative, I may now conveniently record my impressions of the approach to the harbour as seen in daylight, for, much to my regret, as well as that of all on board, the operation of taking in coals was performed with an alacrity to us most inconvenient.

The approach is by an arm of the sea, which penetrates the south-western extremity of the island of Kin Sin to an extent of upwards of six miles. In its course it becomes more and more narrow, until at one point its entire breadth is not more than half a mile. From this point it takes a sudden bend, beginning to increase in width, until at a little distance it expands so as to form the beautiful and completely land-locked harbour that has just been faintly described. The extent of this sheet of water may be said to be about two miles in each direction. Its safety for shipping cannot be otherwise than perfect; for the mountain ranges by which at an inconsiderable distance it is surrounded completely protect it from the effects of the numerous terrific hurricanes or typhoons by which the neighbouring seas are at certain seasons visited.

On either side the whole length of the approach to this harbour is like it, bounded by a succession of hills, separated from each other, and split up by numerous narrow and deep valleys. The hills rise to various heights, from 500 to 800 feet or upwards; their abruptly sloping sides are formed by art into terraces, and these are green with cultivation. Clumps of

forest trees occur at intervals; on projecting ledges, on pinnacles of rock, in fact, on the most beautiful and romantic spots, villages or single houses are built, the material of which they consist being wood, their roofs made to slope towards either side, and formed by well-cut and regularly placed shingles.

Upon all the most commanding points, well built and powerfully armed batteries are so placed as to sweep, if need be, any vessels that would attempt to enter. The majority of these guns are carefully protected by sheds of shingle built over them. It was an easy matter to see that they are of large calibre; but we could not help remarking the strange anomaly that, notwithstanding the care evidently bestowed upon the erection of the batteries, upon their armament, and upon the preservation of their guns, no artillerymen could be detected, nor troops of any kind in their vicinity. That these batteries would prove most destructive, if properly worked, to vessels exposed to them was self-evident. It needed not, however, the eye of a combatant military officer to perceive that, in the event of it ever becoming necessary for our troops to effect the possession of this portion of the Japan Empire, there would be little difficulty in landing and advancing in such a manner as to capture from the rear one battery after another, and finally to command Nagasaki from some of the mountain summits by which it is surrounded.

On the north side of the entrance to the harbour, the precipitous island of Pappenberg rises as it were from the water. Two of its sides are formed by precipitous rocks; the face of the cliffs in some parts two to three hundred feet in height, in others probably one half that amount. The height of the island itself is apparently eight to nine hundred feet; its general form is conical, the summit culminates to a point, and, together with the sides, is covered partly by forest trees of large size, and partly by dense brushwood. A few houses of natives, such as those already alluded to, are built along the base and on the sides of the island, and we are informed that no foreigner is permitted to ascend it.

A melancholy interest attaches to this island. From the summit of the rocks that form its sides, tied hand and foot, were thrown, nearly two hundred years ago, the Roman

Catholic population, and thus Christianity extirpated from Japan. It was a fearful fate. Having been removed to the island, they were, it is said, kept there for a short time, and then, when the ebb tide had left bare many of the rocks at the base—they were cast headlong from the cliff, and, as they reached the bottom, were dashed to pieces.

And now I will endeavour to convey some idea of the view obtained in broad daylight from our anchorage, placed as we were close to the very centre of the harbour. On the side of the harbour, directly opposite to the town of Nagasaki, a series of water-worn rocks rose to a considerable height. Following with the eye the coast-line, hill and valley succeeded each other. The recesses that separated and divided the mountain masses were variously occupied, some by villages, others by single houses, some by cultivation, and one or two of the most picturesque, by burial-grounds, for here, as in China, the people evidently choose such places with reference to their beauties of scenery. Here too, as we had already observed at Cheefoo, the graveyards are readily distinguished from a considerable distance by the upright stones and pillars that mark the resting place of individual dead. At the bottom of one of the valleys were two objects that spoke of the industry and ingenuity of the west, rather than the exclusiveness of the east; of these one was a large coal depôt, where that mineral production was collected and supplied to vessels requiring it; the other was a steam factory, built upon the ordinary plan so familiar to us at home; and adjoining it was a building yard for vessels of small size. Beyond these, and still near the shore, a succession of low wooden houses, of square form and one storey in height, all of a slate blue colour appeared among clusters of trees in various nooks and crannies, whose occurrence had doubtless been increased in frequency by the volcanic operations which in bygone times gave to the mountains here their distinctive look, and which still happen with a frequency unequalled in any other part of the world.

Terraces, rising as it were one above the other, and separated by hedges of brushwood, occupied the sloping sides of the less precipitous hills; on the sides of others, evidently too barren for the purposes of cultivation, rocks and boulders, a few forest trees,

or sedgy-looking herbage, were alone seen. On our right was Desima, that is the town which has of late obtained the name of Nagasaki, from its position at the inland extremity of a "long cape," of which that in the Japanese tongue is the appellation. This town, which contains a population of seventy thousand, occupies an open space between the mountain blocks that rise on the eastern side of the harbour. The site from the shore to the mountain face slopes gently towards the former. There the principal streets occur, but at intervals up to some distance on the adjoining hills, buildings of different kinds have been erected. From the anchorage an excellent view of the whole is obtained, and the striking effect produced is quite in keeping with all that has been already said in regard to the beauty of the neighbourhood generally.

At the southern part of the town is the new foreign settlement; and here, with the energy peculiar to British, buildings were being erected, an esplanade prepared, roads being made, hollows filled up, and projecting ledges of rock blown to pieces, in order that sites might be made for houses intended to be built.

Before proceeding to the town, I visited the steam factory on the opposite side of the harbour. Having landed at a well-built pier close to it, from a native boat, I walked, unmolested or uninterrupted by any person, direct into the building. There steam machinery, such as we see in our dock-yards at home, but on a less considerable scale, was in full operation. Japanese workmen, under the superintendence of Dutch overseers, were busily engaged in manufacturing various pieces of mechanism suited to steam-engines and ship architecture. A small steamer, still on the stocks, was under the process of having steam-engines placed in her; and these, I was informed had been all manufactured on the spot. Great, however, as was my surprise at this, it was considerably increased, when I learnt that among the steam-vessels in harbour was one, named the "Scotland," if I mistake not, that was manned and worked by Japanese alone.

Among other articles that were being made were axles, cranks, toothed wheels; and as I walked through the factory escorted by one of the overseers, who, by the way, was most civil, he pointed out to me an object which he informed me was the model of a

steam boiler which they had begun to forge for a large-sized vessel.

The "timbers" of a second vessel were upon the "stocks" in the adjoining yard; but what seemed somewhat strange was the fact that no "slips" could anywhere be seen. How, then, are the vessels to be launched? Most probably broadside on, as I believe our own Great Eastern was.

I could not but be interested with my visit to an establishment of such a kind, and at such a place. In one portion of it were a series of smiths' forges, and there undressed to the waist, and with skins not darker than those of our own countrymen, were a number of Japanese hard at work, hammering and welding huge pieces of iron as they were placed incandescent upon their anvils.

Here, notwithstanding the reputed exclusiveness of the Japanese, I needed no introduction, nor did I go dressed in uniform. Civility on entering the door was returned by great civility by those within. If I was interested by what I saw, the workmen were evidently so also at seeing me look at and admire their handicrafts, and it was pressure of time alone that prevented me from prolonging my stay in what may be looked upon as one of the most remarkable establishments I had seen since leaving England.

The principal landing-place to the town is at Desima, the small settlement to which the Dutch have hitherto been restricted being so called. This settlement is completely cut off from the Japanese portion of the town by a creek that surrounds it, and across which there is only one bridge. So particular were the native authorities to maintain perfect seclusion of the only foreigners who were permitted to reside in their vicinity, that if perchance a death or a birth was expected to happen among any of their own people who might temporarily have taken up their residence among the Dutch, the persons were hurried across the bridge with all possible speed, so that the interesting event might "come off" on the other ground than that occupied by a despised and hated race.

Now, the buildings and streets of Desima are perfectly European in appearance. Here the principal shops, containing Japanese manufactures and ornaments, are situated, and here

the enterprising visitor generally happens to part with a considerable amount of coin of the realm—that is, of the Japanese realm, for none other is received by the tradesmen, and to obtain it in substitution for dollars or sterling money is no easy matter. Unless at a ruinous loss by exchange, it is only to be done through the custom-house, where a per-centage is charged by the government officials, and it is said, plated copper itzebues are sometimes slily mixed with those of the more costly metal.

We soon found shopping in Desima to be a very different matter from shopping anywhere else that we had ever been. Vendors in most places usually display some anxiety to allure purchasers; not so here; a shopkeeper treats an intending purchaser with the greatest *nonchalance*. Perhaps he does not even rise or move from the mat-covered daïs, upon which as a rule they sit. Perhaps, indeed, no salesman is in attendance. He may have gone out to see a friend, or may have gone into the country; he has left no substitute. You feel there are a score of things at his particular stall or shop you would wish to purchase; nobody, however, knows what is their price—no one is authorised to sell them. You have only a short time to be on shore; your ship sails early in the morning, and, consequently, your most envied Japan "curio" must be left behind, to fall into the possession of some one more fortunate than you.

There is another peculiarity, however, by which the shopkeepers of this part of Japan are distinguished from their fraternity in many places; this is, their honesty. You as a stranger having effected a purchase in their shops, may safely leave your property with them, and obtain it when, at the end of the day's excursion, you are returning to your vessel. Moreover, if you happen to forget any article in a shop, you will be reminded of it by the shopkeeper. This at least was my own experience.

The native town is spread over a great extent of ground. This is caused by the circumstance that none of the dwelling-houses seem to consist of more than a ground-floor and upper story. The streets are wide, and well paved; at intervals they are interrupted by creeks, some being occasioned by the streams that pour down from the neighbouring mountains; others are in the

form of canals communicating with the harbour, and these are densely covered by boats and other small craft.

Across these are excellent stone-arched bridges, and they form some of the principal emporiums for the sale of small articles, from oranges and radishes to ornaments of great beauty and ingenuity; but at the same time, of other specimens of art so objectionable in the estimation of those who have had the advantage of education according to the poorer taste of the west, that they cannot be casually looked at without producing a feeling of disgust.

In what seems to be the principal street of the native town, almost every house in it is fitted up for the purposes of trade in some form or other. Here there are drapers' shops, silk merchants' shops, bakers' shops, clothiers', goldsmiths', booksellers', old curiosity shops, modern curiosity shops; in fact, all those that are usually found in large towns elsewhere. There was one description of shop wanting, however, and it would be well were our town authorities in England to take an example from the Japanese in this one respect, if in none other. There were no butchers' stalls in the principal thoroughfare to offend either the sight or smell of the passengers. Shops of this description were situated in the less frequented parts of the town.

The general plan upon which the houses were built presented scarcely any variety. They consisted in the first place of a nearly square "shell." The ground floor was divided by a partition into one large apartment, which faced towards the street, and a corresponding one which opened into a back yard. In the latter, the kitchen or cooking room and various smaller apartments were formed by means of cross partitions, and at one end was a passage by means of which access was readily obtained to the premises in the rear. The front room was that in which the articles for sale were usually displayed. Here upon shelves and upon stands, made somewhat after the manner of flower-stands usually found in English conservatories, various articles of merchandise, some of which were for the purpose of usefulness, others of mere ornament, were displayed, and all arranged with great artistic taste for effect. The upper story was usually divided into a greater number of small apartments, some of which were used as "show rooms," others were the

private apartments belonging to the family. A narrow, and to our notions somewhat awkward, straight stair communicated with the ground floor; it in all cases consisted of highly scented pine wood, and was beautifully clean. The majority of these houses are somewhat raised by a basement of mason work; their walls and roofs, however, are in almost all formed of deals, so that the first impression we receive on entering the town is somewhat strange, as we look upon a succession of streets, the houses of which are really little more than wooden huts. Timber is evidently very abundant in the island; and in a climate like that of Kin Sin, where great extremes of temperature do not occur, the necessity for houses of more substantial materials does not seem to exist. A stranger would, on entering the town, naturally think that fires must be here of every-day occurrence, and fearfully destructive. Such, however, it appears is not the case; on the contrary, they are extremely rare, and, from the great abundance of water throughout the town, are speedily got under. It must be remembered, however, that here grates and fire-places such as we are accustomed to, are not known. The operation of cooking is far less complicated than with us, and when artificial warmth is desired in any of the private apartments, a chauffer containing a few pieces of burning charcoal, placed on the middle of the floor, is all that is ever used.

Chairs and stools, although not actually dispensed with, are not much used here. The floors in most instances are deemed sufficient for the purposes of these, as well as for couch and bed. Carpets are not used, but, in their stead, a material which to elegance adds the advantage of great cleanliness and comfort.

The actual flooring consists of deal boards from the scented pine-wood of the country, all being well fitted and neatly finished. In the private apartments of houses, and sometimes also in the public rooms, the floors are not left bare. They are covered by beautifully neat pieces of smooth and fine matting, these being stretched upon a framework made of tolerably thick bundles of elastic reeds, firmly secured side by side, and cut into regular shapes according to the size of the room. These, when placed, fit to one another with great precision, give to the room an appearance of tidiness that must be seen to be fully realised, and as we walk upon them, convey a feeling of springi-

ness to the foot such as the most costly Turkey carpets could not produce. Nor is it less pleasant to sit upon them; they act as cushions; and as in every room, odd-looking contrivances of reed, matting, or bamboo, are to be found, which we were informed were used as pillows, a Japanese may at any time transform the floor of his house into a bed.

In the early morning the frames of matting are generally removed, well cleaned, and placed outside the door to be aired. The floors are carefully washed, and then allowed to dry. This operation does not usually occupy much time; the mats are then replaced, and thus the houses made to have a look of cleanliness that might be the envy of the most tidy of English matrons. Here as in India, men and women before entering a room deposit their shoes at the door; all the more respectable classes wear neatly made, and always clean stockings, which have this peculiarity that they have a separate division for the big toe, the more readily to give support to their sandal-like shoes, which are secured upon them by means of ornamented cords or "stays" made so as to unite the sole, with a cross support which stretches over the instep. It thus becomes an easy matter to slip their feet from these "shoes," so that scrapers, rugs, and door-mats are here unnecessary.

It was not alone the apartments of the houses that were pictures of neatness; the back yards of all were in these respects perfect patterns. Here was always to be found a miniature garden, surrounded by a carefully trimmed hedge, although the entire extent was restricted to a few yards. Ornamental flower plots interspersed with the more elegant shrubs; artificial miniature rock scenery, with pagodas, temples, and other buildings, in bronze or stone, were common ornaments, dwarfed shrubs of various sorts growing from some fragments of these diminutive mountain cliffs, in a manner most wonderful to us, who failed to discover a particle of soil from which either nourishment or support could be obtained.

In another part was artificial lake scenery; an island being in these instances an invariable feature in the centre, although the whole might be included in an extent of less than two yards. On the island were placed plants peculiar to corresponding positions on the natural scale; in one or two instances a miniature

bridge connected this with the "shore;" and from the summit of the island rose a jet d'eau, which fell back in spray upon, preserving fresh and healthy, the plants underneath. Gold and silver fish were evidently great favorites: numbers of these little creatures swarm about the little tanks; in others there was a description of animal far less attractive in appearance, yet interesting in its habits. This was the peculiar kind of salamander some years ago sent home to this country by Dr. or Colonel Siebold—for by both these titles is that gentleman known at Nagasaki, and figured in the 'Illustrated London News.' Ugly and repulsive as the creature is, it is evidently an especial favorite here, although in its habits there was no especial characteristic apparent, except a marked dislike to be interfered with or handled.

Most unfortunately the time of my visit to this most wonderful and interesting of all places was extremely limited. Resolved to see as much as possible, I dispensed with all unnecessary ceremony, and with memorandum book in hand, rushed recklessly from house to house, up stairs, down stairs, through back premises, and among the "show rooms," in a manner that cannot possibly be comprehended by him who only knows the aboriginal Briton as that animal is to be met with under the cold, rigid conventionalism of Saxon land. What, it will be asked, were you not knocked down, apprehended, given over to the police? My good sir, or madam, as the case may be, the ways of the Japanese are not as your ways would probably be under similar circumstances. They are a cheerful, jolly, good-humoured people, such as I have never elsewhere met with; they took me for neither a thief nor a burglar, but for what I was, a foreigner whose time was restricted, and who in as good-humoured a way as he possibly could, was, with no sinister intention whatever, hunting for information in regard to the place and people.

On several occasions, by my sudden appearance in the kitchen, I disconcerted for a moment the fair denizens of that part of the establishment. It was only for a moment, however; but then, instead of having abuse and bad language hurled at me, as would probably be the case had the fair ones been "Christians," I was saluted on all sides by smiles and titters. It was evidently looked upon by the occupants as a good joke

to be thus disconcerted, and as I continued my further examination, the retinue by which I was attended usually increased. To communicate by speech was utterly impossible; a few ideas were, however, exchanged by pantomime; and it soon became evident, that prudishness is not among the faults or virtues of the "weaker vessels" of Nagasaki.

In one of the houses that I entered in the unceremonious manner just related, I observed off one of the public rooms in which articles of trade were exposed, an extremely neat and elegantly furnished apartment. The door was open; in fact, I am not sure that any of the houses here have doors with hinges and locks like ours; at least, I have not met with any. Entering this little boudoir, the doorway being at one end I did not at first see that I was intruding upon two of the ladies of the family, who however got up, as I entered, from the mat upon which they were sitting. They had evidently been about to commence dinner, which meal was ready laid out before them.

The table was neatly lacquered—not more than six to eight inches high from the floor, and scarcely two feet square; a series of bowls of the ordinary form, but highly ornamented with paintings; a few similarly ornamented minute cups for "sakee,"* and some chop-sticks, constituted the entire "service." The bowls contained in neatly arranged piles the articles for the intended repast, among some of which I recognised preserved fruits, water-lily root, beet root, rice, and fish, all divided into small morsels, and arranged with apparent reference to harmonious blending of colours.

What would the ladies of some western countries that could be named have done under similar circumstances? Would they have screamed for paterfamilias, or, in the absence of that revered worthy, have rung the bell for "John," that he might forthwith eject "the horrid man?"

The Japanese representative of the former was down stairs, but the ladies were evidently more inclined to practise hos-

* "Sakee" in Japanese, is evidently a generic name for "liquor" in general; thus, on dining, as I had the pleasure of doing with the consul, I found that, according to individual tastes of the guests, the native servants were requested by our hospitable entertainer to help them to "sherry-sakee," "beer-sakee," "champagne-sakee," &c., just as in India they would be invited to take "sherry-shrâb," "beer-shrâb," "Simpkin-shrâb," and so on.

pitality, and have "a little bit of fun," than to throw themselves into hysterics, make a scene, and finally expel poor me neck and crop from the premises. Little persuasion was necessary to induce me to squat down upon the soft mat, dispose of my "understandings" in any way most convenient, and, in fact, form one of this family dinner-party. It certainly is not usual with Englishmen to be waited upon and pressed to eat at table by ladies, and these ladies young, pretty, well dressed, and scrupulously tidy—yet in such a delightful situation I now found myself to be. Each vied with the other in pressing upon my notice what they no doubt deemed to be the greatest delicacies. Unfortunately for me, however, there were neither knives nor forks upon the table—only chop-sticks. With these I endeavoured to grasp a tempting morsel of lily root, but alas! alas! my art failed me when in sorest need, the chop-sticks twisted themselves by some extraordinary means completely out of my fingers, and the lily-root, instead of being quietly deposited in my mouth as intended, made a "cannon" straight off one of my fair entertainers on to the floor. Thus ended my attempts at making a Japanese dinner. My awkwardness afforded great amusement, and with much laughing and giggling, and bowing, and shaking hands, for we speedily advanced even to that degree of intimacy, we parted.

One short paragraph about the tea of Japan, before I pass on to the consideration of other matters. The description of leaf used in private families here is in general appearance very similar to green tea; its infusion is as pale as the brightest descriptions of sherry, but its aroma extremely fragrant, leaving upon the palate a peculiar delicate flavour for some time after it has been drunk. To the uninitiated this peculiar flavour is perhaps too delicate; but I can vouch for the fact that the palate speedily appreciates it so highly, that even China tea tastes coarse. I doubt not, therefore, that before long Japan tea will become a great favorite in England.

A curious Japanese institution is the bath. Much has lately been said, and a good deal written, in regard to it. To one of these places we accordingly bent our steps, and found admission easy, for the door of the only apartment of which the establishment consisted was open to the street. Entering, we were at once introduced to the mysteries of the place. In the centre of

a large, empty-looking apartment, the floor of which was formed of split bamboos, placed side by side, so as to readily permit water to go through between them, a stout, rather young, but not particularly handsome woman, squatted upon the floor. Her costume was none other than what, according to a well-known conundrum, constituted Eve's wedding garment, and close to her, in similar costume, was her child, who appeared to be probably two years of age. It was evident that both had but just come out of the compartment of the bath which stood at one side of the room, and was now empty. Several men, apparently belonging to the establishment, stood about the room, carelessly smoking their neat, small pipes, and indulging in what may have been gossip, or may have been politics. They took no particular notice of the woman, nor she of them. She was intent upon drying herself and her infant; but it must be confessed, that no sooner did she obtain a glimpse of myself and companion, than she quickly threw her clothes over her person. We were informed that of late—that is, since the ports were opened to foreigners—numbers of people of all classes from on board ship have rushed to establishments such as this, and have behaved with such rudeness that the women now endeavour to flee from them if possible.

In a second compartment of the same bath, from which she had just come, a man was busily engaged scrubbing himself. The water he used was so warm that a steam arose from it, and from its frothy look, soap appeared also to be used. I observed that what we had heard of men and women bathing together here, is only true with certain limitations. It is no doubt bad enough, according to our ideas, that they undress in the presence of each other, and enter the same "bath;" but the fact must be stated that this bath consists of a large, deep, broad trough, across which partitions are placed, so as to divide it into two or more compartments, and thus the bathers are partially separated from each other while performing their ablutions.

The streets were crowded by people of all classes, ages, and of both sexes. All seemed of much fairer complexion than that of the natives of North China but with the distinctive features which at once separate them from the people of that country. The lower part of the face is, as it were, more drawn forward than the Chinese; the nose longer, and more prominent; and the

breadth of the face apparently not so great. These impressions are, however, only those that struck me from casually looking at them, and are not given as scientifically correct.

As a class the people, both men and women, are decidedly small in stature, but well made, and apparently of great activity. The majority of the males were armed, some with two swords, others with only one. We had been told sad tales in reference to the readiness with which the people make use of their weapons, and had at first been led to believe that our excursions on shore were by no means devoid of danger. In our progress along the streets, however, we were agreeably surprised to find that not only was civility shown to us by all whom we met, but that cheerfulness and extreme politeness between acquaintances among the natives themselves when they accidentally met, were carried to a degree that might with great advantage be introduced into towns considerably nearer home. Happiness was evident in the expression of all whom we met. They had evidently abundance to eat, abundance of clothes to wear, and, notwithstanding the uncertain tenure which people here are sometimes said to have of their own heads, none of those whom we met indicated, by their demeanour or expression, that they then entertained any particular doubts upon this subject.

The absolute want of wheeled carriages on the streets struck us as remarkable. A few horses we did see; but according to our ideas they were poor and wretched in appearance. In size they were small, not unlike Highland ponies; like them, too, they were shaggy, with long hair. The saddles upon them were of a somewhat peculiar shape, being very high, after the manner of those of Tartary. These horses are not shod as ours are; the rough and rocky nature of the roads would speedily destroy their hoofs unless protected by some means. Accordingly, a sole-piece is made of reed or grass, and secured upon the feet by attached strings. These prevent the horses from sliding upon the rocky paths that communicate with the interior; but, as might be expected, "shoes" of so perishable a description have very frequently to be changed.

Extending our walk to some little distance along one of the narrow roads that wind along the face of the hill that rises immediately in rear of the town, we followed for a little way a mountain stream that came rushing down a bed which it had in

many places evidently excavated for itself. Much to our surprise, we soon came to a mill, with the water-wheel moved by the water of the stream, just as at home. And yet, there was after all nothing in this to cause surprise. People here must have eaten ground grain probably as long as have those of our own country, and this want must have in both places dictated the readiest means of supplying it. The fact is, however, we often experience surprise when in foreign countries we do not meet with contrivances which at home we had been taught to look upon as indispensable, and then, when we do find similar contrivances to those with which we had been previously familiar, we experience wonder also.

Situated upon sites along this path, well chosen with reference to scenic effect, were several Buddhist temples and grave-yards. The former of these were evidently extremely well kept; their furniture was costly in kind, and showed that much art and taste had been bestowed upon its manufacture. Both the architecture of these temples and the manner in which they were fitted up showed that they were much better cared for, and altogether upon a style far superior to what we had been accustomed to see in China. What struck us as somewhat strange, however, was the circumstance that the two or three that were visited by us were shut. The doors were locked and barred; the only way by which we could obtain a glimpse of the interior being through the open trellis work that in some places formed the only front the dwellings had. In general style they were somewhat similar to those that have been elsewhere mentioned as having been seen at Cheefoo, and, like those at that place, were built of stone and mortar. It would appear, indeed, that Buddhism is almost the only form of religious belief professed by the Japanese, if it be not the only one; but if we could judge by the appearance of the approaches to the temples, they were not much worn by worshippers. And neither priests nor devotees crossed our path while we remained on shore, at least none who wore a distinctive style of dress, as is often the case with ecclesiastics in other parts of the world.

In some of the grave-yards we were not a little surprised to find a number of young women busily occupied playing at ball, some of the open spaces around the upright grave-stones, such as have been already alluded to, having been used for this purpose.

The climate, at the time of my visit, namely, towards the latter end of October, was remarkably agreeable, the temperature so moderate that, without inconvenience, we were able to walk about during the whole day, without the necessity for any protection from the rays of the sun. It does not appear that any extended series of meteorological observations have been instituted at Nagasaki; from various sources, however, I learn that the maximum summer heat does not exceed 88° Fahr. in the shade, and the cold does not descend below that sufficient for the formation of hoar frost. The atmosphere contains a moderate amount of moisture, but, so far as can be learned, the climate does not merit the character of a particularly moist one.

A copy of the 'Nagasaki Shipping List and Advertiser' having fallen into my hands, I transcribe therefrom the only series of observations on the climate that it has been my fortune to meet with. These were taken in the month of July, 1861, the thermometer being placed in a verandah having a *westerly* exposure, and consequently showing a higher range than it would have done had it faced the north, as is usually the case.

Date.	8 A.M.	Noon.	8 P.M.	Wind and sky.
July 1	80	83	80	South-west, cloudy.
„ 2	82	84	80	South-west —
„ 3	80	87	82	Calm, clear.
„ 4	80	87	80	South-west, clear.
„ 5	83	87	80	Cloudy and rain.
„ 6	80	83	81	Calm, rain.
„ 7	81	84	83	South-west, cloudy.
„ 8	78	85	83	—
„ 9	82	85	83	—

These few observations are very imperfect, and have evidently been made by a person unaccustomed to such matters. They are in one respect valuable, however, in showing that in what is usually the hottest month throughout the year, the temperature here is really moderate.

We learn that there are no such extremes of climate experienced at Nagasaki as there are on the adjoining coast of China, and we are informed that this arises from a cause of an analogous nature to that which gives to the British Isles their

moderate summer heats, and comparatively mild winters. An off-shoot of the great equatorial oceanic current having passed upwards along the channel which separates Formoza from the main-land of China continues its course thence in a north-easterly direction to Nagasaki, and then from here onwards. Thus, it is to the island of Kin Sin much what the Gulf Stream is to the south of England. Japan is, in fact, in geographical position and its climate, much in the same relation to the eastern great continent what the British Isles are to the western, and it seems to me that this circumstance will sooner or later attract that importance which it deserves in reference to a station for ships of war and troops.

A very few words must suffice regarding some of the natural productions of the place; the remarks which follow being merely those that have occurred from a cursory and very hasty walk through the town and some parts of the country immediately adjoining it.

Among the birds were to be noticed, so soon as daylight had fairly set in, numbers of rooks and kites starting off on their search after food. The latter, as they do in India, hovered throughout the day upon the rigging of our armed vessels in the harbour, sweeping down to pick up by means of the claw, garbage of different kinds that had been thrown into the water. No sooner do vessels come to anchor, than they are surrounded by native boats of various sizes, but all excellently built; these are more or less loaded with various kinds of supplies, of which the most common seem to be fish of different species, eggs, and pork. Bread, in the form of small, tempting-looking loaves was also, as might be supposed, brought off in great quantities; of vegetables and fruits the most common were leeks, sweet potatoes, and carrots. The fruits pitsimmon and pears; the latter hard and insipid, as we had found those of the north of China to be.

In the market were exposed for sale beef and mutton, the former abundant, and of excellent quality; the latter scarce. Sheep do not appear to thrive here; yet with care there is every reason to believe that they might be reared. Pork and poultry of all kinds are very abundant; game in great variety is met with exposed for sale in the market, and fish of a great many kinds in absolute profusion. It is right to observe, however, in reference to the fish, that it is not always safe to indulge largely in them

at table; perhaps, indeed, the new arrival had better eschew them altogether for some little time. Some of our party indulged freely in them, when they first went on shore, but received such a lesson as in all likelihood will prevent them from a like imprudence in future.

Aviaries were evidently great favorites. The side of one entire street was almost completely devoted to birds of different kinds, among which were fantailed pigeons, and a beautiful species of dove with a red bill, bantam fowls of the smallest size I have ever seen, golden and silver pheasants, Java sparrows, avre-de-vats, and the familiar yellow canary.

Of fruits, in addition to those already mentioned, there were tomatoes, oranges, cumquats, and shaddocks. The loquat also was exposed for sale, and this usually delicious fruit looked perhaps the most tempting of the whole. Chestnuts there also were in abundance, and they the largest and finest I had ever seen, and pomegranates, although in no great quantity, were also to be met with at fruiterers' stalls.

During a short walk in the immediate neighbourhood of the town, I met with many plants that were familiar to me; many others, however, I regret to say, were perfect strangers. The "fresh green sward" was for the most part formed by various species of cyperaceæ, intermixed with common mat-grass, from which the mats used in the houses are made. The faces of rocks and of dark shady recesses gave attachment to many ferns of elegant shapes, and creepers of various kinds hung from such places in festoons, or twisted up the stems and along the branches of the magnificent forest trees, that occurred in great numbers. Time did not permit me to classify the plants I knew, as I came upon one after another. Their names were noted down almost in the order in which they came under notice; consequently their enumeration now will not bear the criticism of a scientific botanist; I will therefore give some of their names under the form of a foot-note,* merely remarking in this place, that among other beautiful and ornamental trees I met with here was the much valued camellia, from which, as it grew

* Cycas, sedum; oxalis, viz., the yellow and tuberous species; fir, nelumbrium, a small species of brinjal; the tobacco plant, turnips, radishes, sweet potatoes, buxus, saxifrage, laurel, oleander, creeping fig; polygonum, both wild and cultivated rumex, lycium, melons, sunflower.

upon the wild mountain face, I had the great pleasure to pluck some of its fully expanded flowers. Wherever a well had been excavated, its sides were thickly lined by ferns and mosses—willows grew in the more moist situations; oaks formed the principal tree in the forests, and in the neighbourhood of temples, the maiden hair-tree (*Salisburia adiantifolia*) was always the greatest ornament of its class. Fields of the edible arum were not uncommon, and trees of the *Dyospyrus kaki*, or pit-simmon, were to be met with in almost every enclosure, its yellowish red-coloured fruit hanging temptingly from the branches. Not a few plants of hydrangea, in full flower, grew upon the more rocky places, and hedges of cryptomera surrounded some fields of small millet, the full-grown and magnificent trees of the same description of pine towering here and there far above the other kinds that cover and ornament different valleys and portions of the mountain sides.

In addition to millet, rice is very abundantly cultivated hereabout, upon terraces such as have been alluded to already, and these two descriptions of grain form the principal food of the people. It might be believed that the cultivation of rice must necessarily render the places adjoining very obnoxious to health. This does not, however, appear to be the case here. On the contrary, Nagasaki, so far as I could learn, enjoys a high reputation among the natives themselves for its salubrity.

I am reluctant to take leave of this most exquisitely beautiful and interesting place without alluding once more to the greater civilisation of its people than what was to be met with among the Chinese, at least those in the north and near the capital. It may, indeed, be well said that one of the best tests of the degree of civilisation attained by either a single person or a community, is shown in their manner of treating a woman. The more barbarous the people, the less do they associate with their women.

Now, in Japan; at least if we can judge from what I observed at Nagasaki, families seem to have about as much intercourse among each other, as is the case with ourselves. Wives, instead of being secluded, or kept separate from the males of a family, mix with them, and take upon them the duties of the household much after the manner of our own women in England; and I am inclined to believe that, notwithstanding the freedom, and

perhaps frivolity often shown by even matrons in Japan, there is among them less actual harm than might be found in some societies where more outward decorum is observed.

The civility of the people has already been remarked upon; indeed, I have never seen so great a degree of civility displayed towards strangers and foreigners as that shown by the more respectable classes of Nagasaki towards us. From various sources we learned that they and the inhabitants generally of Kin Sin are well disposed towards the British, and entertaining as they do the belief that before long, one or other of the great powers will assume possession of the island, they go so far as to express their hope that this power may be Britain.

In the course of my notes on China, I had occasion more than once to remark how very desirable would be a sanatarium somewhere in Japan, to which invalids from our stations in the former might be sent. My cursory examination of Nagasaki convinced me that here is really the best possible situation for such an establishment. The place itself possesses in an eminent degree all the ordinary indications of being a healthy one. Building materials are abundant, and cheap labour is procurable to any extent. I have good reason to know that a site for a sanatarium could readily be purchased or rented from the local government; and, as already observed, the people seem to be well disposed towards us.

An inspection of a map will show that Nagasaki is most conveniently situated in regard to our various stations and settlements upon the coast of China. So convenient is it that invalids might be transported thither from Hong Kong in a little shorter time than five days, from Shanghaie in three, and from the Gulf of Pecheli in about four; thus, sick men would in this brief period be enabled to exchange the frightful climate of these places during the most unhealthy season for a climate as near as possible similar to that of one of the most favoured parts of England; and no person can fully comprehend how vast a blessing this would prove to men prostrated by sickness and pining to death in such pęstiferous places as these are, unless he himself has witnessed the sufferings and abject despair of unfortunate men, who, for want of such an asylum, die poisoned by climatorial causes from which they could not be removed. I do therefore trust that before another year has elapsed, such an

establishment as I now advocate will be in full operation at Nagasaki. There is no difficulty about the matter; let government but give the order and full authority, and I will take upon myself to carry out the details.

But this is not the only respect in which Nagasaki claims the attention of the authorities. The one to which I am about to allude does not certainly come within the province of a medical officer; but he does not necessarily walk about having his eyes in his pockets, any more than generals or admirals, and a geographical chart may convey to him as valuable information as to any person else.

Few people need now to be told that Russia has lately obtained an immense addition to her territories towards the mouth of the Amoor. In consequence, however, of the great severity of the winter in that latitude, egress for vessels to the ocean is not then obtainable; were that power to obtain possession of the Corea, docks and building yards would speedily spring up there. It seems that from certain parts of that promontory vessels might proceed to sea at any period of the year. It, therefore, needs not the gift of prophecy to forsee that in the event of such a contingency happening, many of our settlements in the east, and even nearer home, would be more or less at the mercy of the Muscovite.

Shortly prior to my visit at Nagasaki, the discovery was made that two islands situated in the Straits of Corea had already been taken possession of quietly by the navy of Russia, and that, upon one pretence or another, the fact was clear, there was no disposition upon the part of the possessors to abandon their prize. As matters now stand, England has in reality no military possession or naval station of sufficient importance in this direction to enable her successfully to oppose the encroachments of any naval power. Nagasaki possesses a harbour that cannot be excelled; the approaches, if defended by British artillerymen might bid defiance to the most powerful armaments on shipboard; and the natives of the island seem to look forward with hope and anxiety to the day when Kin Sin shall form an integral part of the British empire.

London, New Burlington Street,
November, 1862.

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