

## **Report on the Hurdwar cholera of 1867 / by John Murray.**

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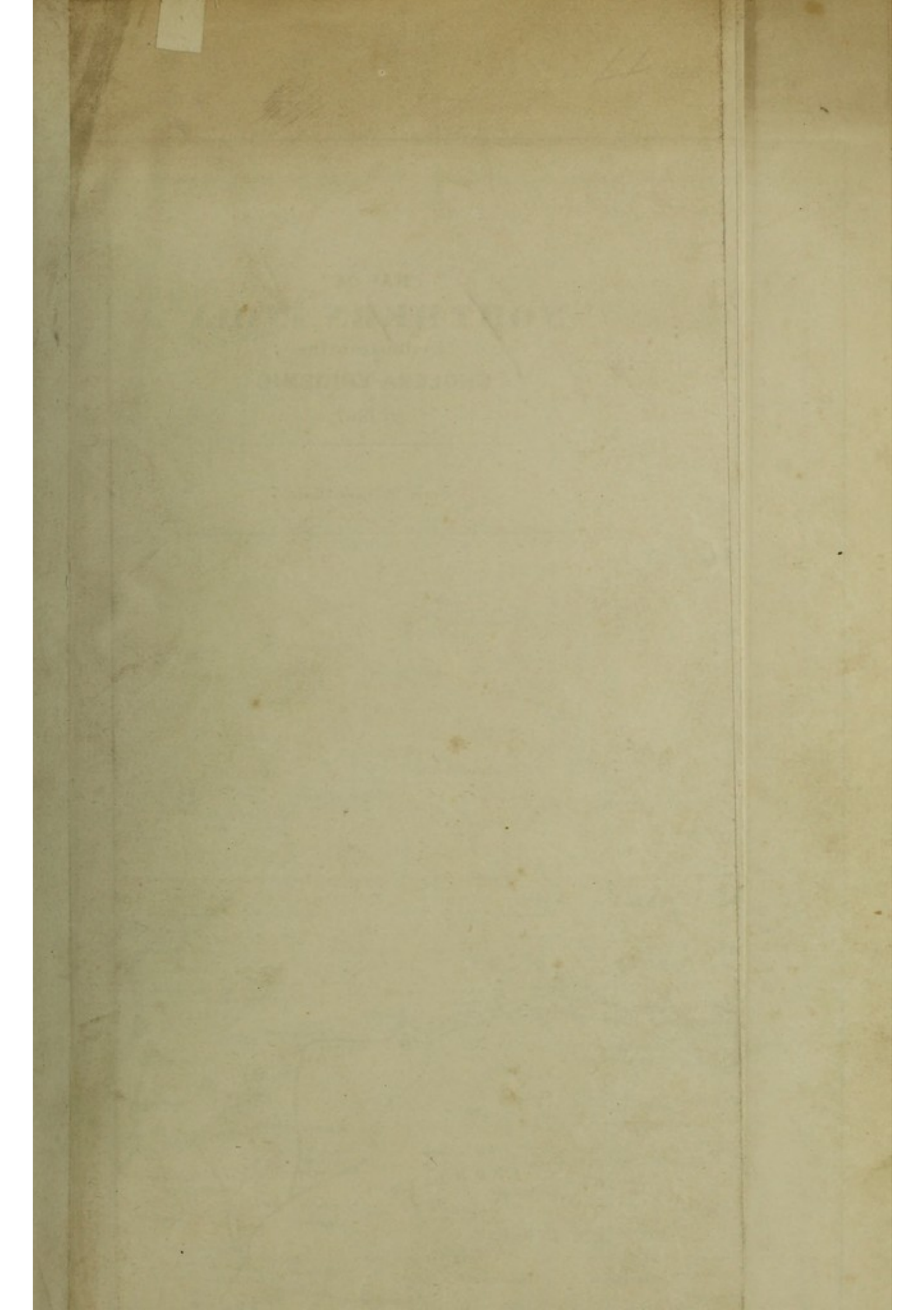
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*Mean - 1868, 6 miles from ... from the ...  
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INDIA, Upper Provinces. Inspector -  
General of Hospitals

A. S. Murray  
with the author and wife  
M.

## REPORT

ON

### THE HURDWAR CHOLERA OF 1867,

BY

JOHN MURRAY, M. D.,

*Inspector General of Hospitals, Upper Provinces.*

THE history of the Hurdwar Cholera of 1867 illustrates several of the most important characteristics of the disease, and determines, by an accumulation of evidence, certain vital points on which opinions differed.

The probability of the appearance of the disease had not been overlooked, and means were taken to ward it off. When it did appear, the best known available means of curing the sick pilgrims, and guarding the country through which they passed, and the homes to which they returned, were immediately brought into action. The experience here gained will be valuable in future, not only in India, but all over the world, in those countries where Cholera has established a footing, and from which there is no proof that its grasp has been loosened; and where its more frequent appearance, as in India, may be anticipated.

A mass of people, nearly as numerous as the population of Scotland, converging from the whole Hindoo world of Eastern Bengal, Southern India, and Western Punjab, was located on a bare plain on the banks of the Ganges on the 12th April. On that day they performed their allotted ceremonies and then dispersed, so that on the third day the place was again bare. The solid stream of pilgrims on foot, in hackeries, or on camels, which flowed along the road past Meerut (which is 80 miles distant from Hurdwar) for nearly a week, was like the crowd of a London street.

In ancient times the sacred bathing place was at the source of the Ganges, amongst the glaciers, near the summit of Budranath—one of the snowy peaks of the Himalayan Mountains. In modern days it has been transferred to Hurdwar, where the Ganges escapes from the mountains, and enters the level plains of Hindoostan. A sacred fair, or mela, is held there annually about the 12th of April; but every twelfth fair is held to be peculiarly sacred, and called "Koombka-Mela." There was a story in circulation that this would be the last of the great Koomb Fairs, as Hurdwar had lost its sacred character, from the Ganges having been diverted into the Ganges Canal. Probably the Railway and Electric Telegraph, with the advance of intellectual education, will strengthen this idea during the next twelve years, and tend to its fulfilment; which is much to be desired; for, though the means which the present knowledge of sanitary science suggests, were freely used, and apparently with advantage, still the assemblage of such a mass of human beings, has been followed by great sickness and mortality from a disease which originated amongst themselves, and was disseminated by them, for hundreds of miles, causing the loss of many thousands of lives.

The encampment at Hurdwar, occupying about 25 square miles of bare, level, sandy ground, was regularly sub-divided into streets and lanes, with shops, in which an ample supply of good food was provided, where the water was supplied by the sacred Ganges, and where conservancy was provided for and carried out most strictly and effectually. The people lived in tents, or "in neat and picturesque-looking grass-huts." Commerce formed a powerful attraction for the meeting of Mussulmen, and a second object to the Hindoos. People began to assemble in the end of March, but the fair was not regularly open until the 3rd April; the crowd rapidly increased until the great bathing-day on the 12th at noon (when it is calculated to have reached nearly three millions), after which it suddenly dispersed. By the morning of the 15th, the entire ground, so lately covered with encampment, was a bare plain again.

The weather had been rather warm in the end of March; but there were several slight storms with rain, which rendered it pleasant, till the night of the 11th April, when there was a very severe thunderstorm, with heavy rain, which lasted all night, and up to noon of the 12th. There was a remarkable and sudden fall of the temperature on that day, amounting to 14 degrees, as shown in Table No. 1. The whole of the remainder of the month was unusually cloudy and rainy.

The health of the great crowd was remarkably good up to the 11th of April. This is proved by the evidence of the Medical, Civil, and Military Officers on duty, by the Hospital Returns, and by the evidence of the pilgrims, many of whom were questioned by myself on the road at Meerut. The testimony of all was that previous to the 12th, there had been no sickness; but that the Cholera appeared after the bathing (*nihana bad*), viz., noon on the 12th. There were several cases of Cholera that afternoon, and during the night; but only 8 were admitted into hospital next day. There may have been a casual case previous to this date, and four such were reported by the Police; but on inspection by the Medical Officer, they were not considered to be Cholera; and there was one slight case in a grass-cutter of the Cavalry detachment, on the 9th. At the three hospitals, from the 3rd to the 13th of April, there were 1,352 patients treated, of whom 19 died; of these, two were from diarrhœa; but none from Cholera. There can be no reasonable doubt that Cholera was not present in an active form, on the 11th; and it is equally clearly proved that it did exist on the 13th, and that it contaminated and accompanied each and every one of the streams of returning pilgrims. Before following its course from Hurdwar, it will be necessary to investigate its development or origin on the 12th.

In the North-Western Provinces, and the Punjab, Cholera has not been known to prevail during the cold season, or the earlier part of the hot season, except in *large crowds*, such as the *Magh Mela* at Allahabad, the Hurdwar Mela, and at the great Durbar at Agra last year. But in these the disease has had more of an endemic, than an epidemic character; the sufferers on their return, often dying in numbers on the road, without the residents of the places through which they passed, being materially affected. There is no record, or reason to suppose, that Cholera was prevailing at this unusual season, in any part of the Punjab, or the North-Western Provinces, with the exception of a belt of land skirting the Turæe, at the foot of the Himalaya Mountains. In February,

Cholera was prevailing in the Turæe villages, in the vicinity of Nynce Tal; and it extended, skirting the hills in a westerly direction, in March; and there were nineteen cases, from the 5th to 12th of April in the village of Bazpore, which is 60 miles to the east of Hurdwar; and from this place doubtless pilgrims went to Hurdwar. Cholera was prevalent at Benares in March, and there were several cases in the jail near Allahabad on the 24th March, of an epidemic type. Returns from all the Districts and Stations in the North-Western Provinces and the Punjab, shew that previous to the 12th April, and till after the arrival of the Hurdwar pilgrims, there was no epidemic Cholera present in them. Had the disease been imported from Bazpore, it would probably have first shewn itself in the Bijnore portion of the camp, on the left bank of the river, where the pilgrims from the Turæe were collected; but from the 3rd to the 13th April, only one case of diarrhoea, and no Cholera was treated in the Bijnore camp, by Dr. Gardner. The simultaneous appearance of Cholera in every section of the pilgrims, who separated by various roads on the day the disease appeared at Hurdwar, indicates a more general, or atmospheric origin, than dissemination from an individual source. There is a remarkable coincidence between the thunderstorm and heavy fall of rain, on the night of the 11th, and morning of the 12th, and the appearance of the disease on the evening of the 12th. There was probably a connection between the two events; but the link that unites them, though now obscure, may yet be discovered. The severe attack of Cholera which appeared among the pilgrims at Mahadeo, in the Panch Murree Hills, in March 1865, was attributed to "unseasonable showers." There was an analogous coincidence between a sudden fall of rain, and the appearance of Cholera, during the present year, in the vicinity of Agra. On the 29th May the female pupils of the Secundra Orphanage, were drenched by a sudden storm of rain, when taking their usual walk. During that night, and the two following days, 31 out of 168, were attacked with Cholera, and 15 more during the following six days; after which no more cases appeared. The other pupils, consisting of 119 christians, and 169 boys, were immediately removed, and no case occurred among them.

There are numerous instances on record of Cholera appearing amongst troops who have encamped on ground recently occupied by regiments, who were suffering from Cholera. The disease has been observed to re-appear in the hospitals occupied the previous year by Cholera patients. In the six Cholera epidemics which have been under my management at Agra, it appeared about three weeks after the rains set in. The Orphanage at Secundra suffered during these epidemics, and Akhbar's tomb in the vicinity was occupied by troops, or prisoners, on each occasion. In this instance of the orphans at Secundra, I consider that the seeds of Cholera were in the ground, and were developed by the rain.

There are records of severe epidemics of Cholera at Hurdwar, dating as far back as 1783, with more recent attacks in 1819, 1827, 1829, in 1855 and 1857; since which date there has been no attack till now—after an interval of ten years. Had there been Cholera at Hurdwar in 1866, I should have attributed the attack of the present year, to the disease having been brought into activity by the rain, on the night of the 11th. The period during which it may lie dormant, till called into force by favorable circumstances, is not known.

I see no valid reason to question the probability of the seed of the disease, deposited on some previous occasion, having been brought into action by the rain, in the immense crowd collected during the present fair at Hurdwar. The stage of incubation of the disease varies from a few hours to three or four days. It only rarely exceeds the latter period.\* As it appeared on the afternoon of the 12th, and as it was diffused over the whole crowd of pilgrims, who departed on the 13th, the attack must have been of recent date, and of general application. The fall of rain, on the night of the 11th, was evidently the exciting cause, bringing into action the germs of the specific poison of Cholera, for the growth of which the dense mass of shivering pilgrims, formed a rich soil.

There may be uncertainty regarding the origin of this attack; but the nature and character of the disease, in its practical points, were clearly demonstrated during the return of the pilgrims to their homes. The pilgrims began to depart on the afternoon of the 12th, and radiated, as from a centre, all over the country.

The immense crowd had entirely dispersed by the morning of the 15th. They passed, at a favorable season of the year, through a healthy country where supplies were abundant, and where extensive arrangements had been made for their convenience. They travelled chiefly on foot, and slept in the open air, or under trees. Some had camels to carry their luggage, and there were a great many bullock-hackeries and bhylees, which carried families with their supplies. The ordinary rate of progress was from 15 to 20 miles a day. A few travelled quicker, by the horse dawk carriages, and many continued their journey by rail, after reaching Gazeabad and Umritsur. The moving mass crowded the road in a continuous stream, for nearly a week at Meerut, where I remained to watch the course of the disease. This pilgrim stream carried with it Cholera, which lined the road with victims, whose funeral pyres studded the surrounding fields, or whose bodies were thrown into the canal or collected by the Police and buried. The disease was communicated to the neighbouring towns and villages, and the pilgrims carried it with them to their homes, over the whole of Hindoostan.

There were cases of the disease, on the 13th April, at the first stage, on each of the four main lines of road, *viz.*, 1st, at Bajwanpore, 23 miles from Hurdwar, on the way to Mooltan, to the west; 2nd, at Roorkee, 19 miles on the road to Hissar and Jeypore, to the south-west: as also on the 3rd line of road, *via* Meerut, to Allahabad, to the south; 4th, at Nujeebabad, 14 miles on the road, *via* Bijnore, skirting the Himalaya Mountains, towards Oudh, to the south-east. The accompanying Table No. 2 shews the distance of the various stations from Hurdwar, and the date at which the disease was reported among the pilgrims, and the date at which it appeared among the residents. This Table is compiled from the reports of the Civil Surgeons of the chief stations, and from those of the Police Officers, for the districts and thannahs. There are returns from 597 districts and towns on the line of returning pilgrims, showing 22,402 deaths from Cholera in the months of April, May and June. Perfect accuracy is not to be expected from all these sources. The mortality alone is recorded in the general

\* Cholera appeared within three days of the arrival of the pilgrims in upwards of 70 per cent. of the villages, of which I have received reports on this point; but they are not complete.

Police reports; the number of cases and the date of attack is not recorded; and the interval between the arrival of the pilgrims, and the appearance of the disease among the residents, is only approximated from the fatal termination in both cases. The concurrence of so many independent witnesses to the fact, that the different villages and districts were free from the specific disease, Cholera, previous to the arrival of the pilgrims, and that the pilgrims brought the disease with them, from which they died after their arrival, and that their relations, friends, and neighbours were soon after attacked with Cholera and died; these facts can leave no doubt regarding the communicability of the disease, and the means—at any rate one of the means—by which it may be transmitted from one place to another. There are numerous illustrations in the reports of the manner in which the disease was transmitted to families on the arrival of relatives, to people of villages communicating with the pilgrims, to those who ate the food left by pilgrims, or travelled in the same carriage with pilgrims, and being afterwards affected by the disease.\*

Many suffering from Cholera were carried forward in the hackeries, and even dead bodies were found so carried, when the hackeries were inspected before crossing the Sutledge at Roopur. The affected were also transported by Railway to Allahabad, and Mooltan, where the disease shewed itself on arrival. At the latter place it appeared at the terminus in a pilgrim on the 26th April, and in the town of Mooltan in a pilgrim on the 3rd of May; and on the 10th amongst the neighbours, gradually spreading in the city and extending over the district.

It is remarkable that Cholera has not raged at Mooltan since 1844, when the disease apparently came down the line of the Indus from Cabool. The long, arid, little frequented road between Lahore and Mooltan, probably guarded it from the Cholera which raged severely at Lahore in 1856 and 1861. The rapid communication by rail has now opened the way to the disease.

The disease was evidently communicated by the pilgrims to one another on the road, either in the hackeries, or by contact, or by consecutive parties occupying tainted ground; otherwise the disease would probably have died out before their distant homes were reached.

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\* The following extracts from the reports are interesting and valuable :—

1st.—From the report of W. E. Blyth, Esq., Deputy Commissioner, Montgomery, half-way between Lahore and Mooltan. "A pilgrim was taken ill of Cholera at noon on the 28th April, at a well in the village of Jhoogh Kullan (he died next day), and his soiled clothes were washed in an adjacent pond. Other parties who afterwards visited the well and the pond for water and ablution, caught the infection. The disease broke out on the 30th, and, up to the 15th May, 53 were attacked, of whom 27 died."

2nd.—From Dr. Gardner, Civil Surgeon, Bijnore. "At the village of Bisahat two men, who had returned from Hurdwar Fair, died of Cholera on the 30th of April, and their clothes were not burned according to orders given, but were washed in a pond which was inside the village, the water of which was used for domestic purposes. On the 1st and 2nd May, in the same village, sixteen attacks occurred."

3rd.—From Major Mercer, Deputy Commissioner, Sealkote. "A pilgrim arrived at Wadala suffering from Cholera. The *Hakeem* who attended him lost his son and daughter from the infection, and the disease spread rapidly. Between the 7th and 14th May, 29 persons were attacked, of whom 6 died."

4th.—From Dr. Williams, Civil Surgeon, Ferozepore. "On the 24th April, the first case of Cholera occurred in the city in the person of Gunga Dass, who had not been to Hurdwar, but had returned from Jullundur, *via* Ludiana, on the evening of the 23rd in a dawk gharree in company with pilgrims."

5th.—From Captain Harris, Superintendent of Police at Umballa. "A party of pilgrims cooked and ate their dinner under some trees at a village near Roopur, on the 22nd of April, and continued their journey. Two sweepers from the village ate part of the food they left, and were attacked with Cholera 12 hours after eating it."

6th.—From Dr. Taylor, Civil Surgeon, Delhi. "One woman here had Cholera, being seized two hours after laying out a friend who had died of the epidemic."

I did not expect that the residents in the North-Western Provinces and Punjab, would suffer severely at the time of the passage of the pilgrims, as April and May are not the usual months for Cholera to prevail in these parts of India; but I anticipated that it would prevail during the rainy season, which is the usual season for epidemic Cholera. However, the disease appeared among the inhabitants on the arrival of the pilgrims all over the country, spreading extensively along the foot of the Himalayas, and extending far into the interior of the hills. It appeared amongst the European troops at Umballa and Peshawur. Again, on the south-west line, towards Hissar, it spread generally, and proved very fatal. It has, as anticipated, re-appeared, since the rains set in, in many of the stations in the North-Western Provinces, where it has attacked the European troops which escaped in April, as Meerut, Bareilly, Moradabad, Gwalior, and Lahore.

The disease had the usual symptoms of epidemic Cholera, with the variations which have come under my observation since I first saw it in Paris in the year 1831. Its appearance among the pilgrims is well described by Major Mercer, Assistant Commissioner, Sealkote,—

“1st.—Thirst;

“2nd.—A feeling of sinking in the stomach, and pain through the ribs on the region of the liver; (?)

“3rd.—The face then becomes anxious, and the eyes hollow.

Up to this stage the preventive (Cholera) pills have been found most efficacious, and when they were not procurable the disease has rapidly taken the usual form,—of purging and vomiting, cramps, and rapid collapse, terminating in death in a few hours.”

Many thousands of these Cholera Pills were distributed at the different camping grounds, and stations along the lines of pilgrims, and throughout the country, in the villages affected by the disease, and exhibited to the sick, with the favorable result mentioned.

This is not the place for a detailed account of the medical treatment of the various stages of the disease; but the precautionary measures adopted to secure the health and comfort of the pilgrims at Hurdwar, and on their return to their homes, and to protect the country through which they passed, may be mentioned in this description of the progress of the disease over India.

At Hurdwar, they consisted in securing good food and water, with free ventilation, in a regular encampment with convenient conservancy arrangements; the whole being kept in order by a most efficient Police force.

As the people arrived they took their places in a regularly planned encampment, with straight, broad roads. Ample stores of wholesome food and necessities had been laid in: the Ganges water was near, besides there were several good wells. Latrines were constructed in convenient situations, and screened in; and an establishment of 700 sweepers employed. The dry earth system of conservancy was used. Some of the Natives attributed the Cholera to this, that discharges continued moist under the covering of earth, instead of being dried in the sun, as formerly; and that the heavy rain penetrated this covering of earth,

and caused the exhalation of noxious gases. This was the only part of the arrangements that was not highly praised by the pilgrims. In this instance, there was but a choice of evils, and that these were less under the new than under the old system, was proved by the absence of the intolerable stench previously complained of. It has been suggested that it might be an improvement to remove the night soil in carts. To extemporise such a conservancy establishment for an encampment containing two-thirds the population of London, would be difficult and rather expensive; and it could not be so effectual and free from annoyance, as what was used while the weather continued dry; and it is questionable if it would be more perfect during rain.

There were three hospitals established, chiefly intended for surgical cases and accidents. There was another hospital, in a detached enclosure, for contagious diseases, as small-pox and cholera. Much good was done by dispensing medicine to the numerous troublesome ailings of the pilgrims; and relief from pain, and comfort were given to a few worn-out and hopeless cases, before they died.

The arrangements for assisting the progress of the vast crowd of pestilent pilgrims through the country, and guarding its inhabitants from the disease they brought with them, were less complete: and it is doubtful if the instructions given were, in all instances, strictly attended to, or efficiently carried out.

The general outline of operations was, to prevent the pilgrims entering the towns they passed, and to supply them with food and medicine on the road; and to detain the sick in hospital until cured, keeping back one friend to attend; but allowing the party to proceed. The pilgrims, on arriving at their own towns, were, in some, placed in quarantine for a week; whilst, in others, the parties were detained only one day under inspection, and then allowed to enter the town, if well. On approaching cantonments or cities, the pilgrims were diverted from the main road, from three to five miles before it reached the city, and only allowed to rejoin it, some miles beyond. There was a cordon of Police along the line, and there were stringent military arrangements in all cantonments. A Cholera Hospital, with bunneca's shops supplying food, was placed at the diverging point in the road, and all Cholera cases were there detained. Similar arrangements were made near some of the camping grounds. But many tainted must have passed unnoticed, particularly in the hackeries which were covered. Undoubtedly some pilgrims passed the cordon, and visited the cities for supplies, and there are reports of the inhabitants visiting the pilgrims, and being attacked with Cholera soon after returning. In only two stations were the European troops affected at the time the pilgrims passed, and Cholera appeared in only one jail; but there were few cities that were not affected. In general the numbers were small, and the disease did not prevail long. Still the extent of country is so great that I have received reports of upwards of 42,557 42,557 from Cholera amongst the pilgrims and inhabitants. This number is doubtless far short of the truth. The comparative exemption of jails and military cantonments, suggests the general employment of the means there used, to keep out the disease, *viz.* strict seclusion, with scanty communication with the outer world. But is this stoppage of intercourse practicable in a thickly populated country, with large commercial towns, and open un-walled villages? Can it be

expected that stronger measures than were adopted on this occasion, would meet with the cordial co-operation of a people, strongly imbued with the belief in *kismut*, or fate, like those of India? The means employed saved the lives of many of the pilgrims, and materially checked the spread of the disease among the inhabitants. Absolute immunity is unattainable; but by further development of the sanitary arrangements of the pilgrim camps along the roads, and in the towns generally over the country, the separation of the sick, and extension of medical arrangements, a further alleviation may be confidently looked for. These sanitary arrangements would involve considerable expense, which should be borne by those for whose benefit it is incurred. A sanitary tax might justly be imposed for this purpose, on all pilgrims visiting Hurdwar, or similar melas throughout the country.

SIMLA,  
The 12th Sept. 1867. }

JOHN MURRAY, M. D.,  
*Inspector-General of Hospitals,*  
*Upper Provinces.*

## ADDENDA TO HURDWAR CHOLERA REPORT.

p. 3, line 31. On the 19th May there was a very severe storm at Peshawur, and on the morning of the 20th cholera broke out with great intensity among the European Troops in the Cantonments, and two days later in the City of Peshawur. Three inches of rain had fallen on the 13th and 14th May, which is unusual at that season. A party of Pilgrims from Hurdwar had passed through Peshawur on the 19th May. During the present year in Europe there was an instance of cholera appearing simultaneously with a severe storm. "Upon that fatal morning (6th August 1867) it is said a sudden thunder storm burst over the hills. The air grew dark and a wild wind rose and chilled the thinly clad inhabitants to the bone. It is said that with this storm there came a sudden pestilential smell which made itself felt all over the neighbourhood. That day there were seventy deaths from Cholera in Albano, and all the wild incidents of a plague-stricken city were brought into immediate life on the little town, which but a day before had been so pleasant and cheerful."

In former epidemics there have been many instances of the disease being suddenly developed after religious festivals or funeral or marriage feasts. There were two marked instances of the latter during the present epidemic at Mooltan and Bhurtpore (see note), where there had been slight symptoms of the disease in the vicinity connected with the Hurdwar Pilgrims.

NOTE.—From Dr. DeRenzy, Civil Surgeon, Mooltan. "Wally Ram Mody, a pilgrim, arrived by train (at Peshawur) on the 1st May with his wife, and passed into the city on the morning of the 2nd. His wife was attacked with cholera on the 3rd, and died on the 6th May. There was a large funeral party on the evening of the 10th May. From 4 p. m. to 9 a. m. of the 11th there were twelve cases, of these nine occurred in the Goga Mohalla within a few yards of Wally Ram's house.

2nd.—From Dr. Harvey, Surgeon, Political Agency, Bhurtpore. "On the 4th May 1867, there were two wedding feasts at Seiwar, four miles from Bhurtpore. The village was healthy at the time, but there had been a few cases of cholera about a week or ten days before. Next day (the 5th) three persons, all of whom had been at the feasts were seized with cholera, and on the 6th ten more. Of these ten three had been at the feasts, and four were children in the house of one of the men attacked the previous day."

Erratum.—p. 4, line 44, for 22,402, read 42,557, and in the note subjoined—del, "but they are not complete" and add. This return will be completed when the Epidemic has ceased, and will form Table III. to be attached to this Report.

p. 5, line 6, add as a note after the word "pilgrims."

NOTE.—"The sudden increase of cholera from April is shown in the monthly returns from the Punjab, where there are at all seasons a few sporadic cases. The deaths from cholera in January were 107, February 48, March 81, April 3,305, May 10,304, June 8,746, July 6,772. The population is 15,124,266.

Additions to note p. 5. "7th."—From Dr. Morice, Staff Surgeon, Gwalior. "A sweeper who had been in attendance on a Gunner (European) in the Artillery Hospital, who had died of cholera, was attacked next day and died in a few hours. A dresser belonging to the Artillery Hospital was attacked and died and his brother, who attended on him during his illness, also took the disease and died; the Bheestee employed in the Cholera Hospital was also attacked."

8th.—From Native Doctor Prosono Coomarr Dass, Khetree. "On the 30th April, three days after the arrival of the Hurdwar Pilgrims, the cholera broke out in the Fort. Three persons were taken ill the same day. About four miles on the West of Khetree, is a small hamlet situated in a vast bed of sand, surrounded on all sides with hills. Here the deaths were about 50 per cent. A family, consisting of four members, were all taken ill in the night, and died in the morning. The inhabitants fled away and thus saved themselves."

9th.—From Dr. Whittall, Deyrah. "An old woman, running away from Deyrah for fear of the cholera, was 'taken' (with cholera) at our gate and carried into the hut of one of the artisans. Four in that house were attacked, three died and one recovered: the original old woman recovered."

10th.—From Dr. Harvey, Surgeon, Political Agency, Bhurtpore. "On the 5th May a man who had assisted at one of the weddings (see note p. 5.) went over to Mallipur, a village about three quarters of a mile from Seiwar, this village was then quite healthy. In the evening he was taken ill (with cholera) and died next day. Within a week twenty-five others were attacked and five died."

116.—*Evening Mail*, 7th October. This year Cholera entered the country, (Switzerland) in the person of a little girl who arrived at Zurich last July from Italy. The mother had died of Cholera at Rome; and the child on reaching Zurich was said by the nurse to be suffering from diarrhoea, she was treated accordingly, and died in a few hours—of Cholera. The child's linen was sent to the wash, and the washer-woman died. The inn or restaurant, at which the little girl had staid is much frequented by the workmen from M. Escher's well known factory. Several of them were attacked, and through them their relations, and among the first cases there were scarcely any cures. It is very remarkable that there have been no cases any where (in Switzerland) that have not been directly or indirectly introduced either from Zurich or from Italy. M. Lacken, a man who had just arrived from Zurich, died of Cholera. The Doctor who attended him caught the malady, but recovered.

p. 6, line 31, after disease; but a practical illustration of the benefit of removal, in the *general* treatment, as now adopted by Government, is shown in Table No. IV. which shows the diminished mortality among the European Troops since 1861, when their removal into camp on the appearance of cholera was successfully employed at Agra, and has since been ordered by Government. To this measure, combined with increased accommodation and other sanatory improvements, the saving of life may be justly attributed; in so far as the disease has not been less virulent; as shown by the mortality amongst those attacked, having been greater than in former Epidemics. In the three Epidemics of 1856-60 and 61 the mortality exceeded 7 per cent. on the strength; whilst in those of 1862-63 and '67 the mortality was under 4 per cent. At this rate the saving of life in the stations attacked this year would amount to 322.

Table No. 1.

*Abstract of Meteorological Observations made at Roorkee by Dr. Murray Thompson.*

Chart showing the mean temperature of April 1867.

Day	Mean Temperature (°F)
1	80.0
2	80.5
3	81.5
4	82.0
5	81.5
6	82.5
7	81.0
8	80.5
9	81.5
10	82.0
11	66.0
12	75.0
13	76.5
14	77.5
15	86.0
16	81.5
17	81.0
18	80.5
19	79.5
20	76.0
21	76.0
22	77.5
23	80.0
24	84.5
25	86.0
26	84.5
27	83.0
28	81.5
29	79.5
30	81.5
31	84.0

#### REMARKS.

Cloudy weather prevailed nearly all the month; the clouds generally increasing towards the afternoon of each day. Rain fell on 6th, 9th, 11th, 12th, 15th, 16th, 19th, 23rd, 24th, 25th, 27th, and 28th; no fewer than twelve different occasions; but on one of these only was the fall measurable by the rain gauge. This rainfall happened on the evening of the 11th, and early morning of the 12th.

The mornings were generally calm, especially in the first half of the month; but the wind rose as the day advanced, reaching its highest about three or four o'clock p. m. There were high winds from the west on the 6th and 9th, and a strong South-East wind blew on the evening of the 11th and morning of the 12th, along with the heavy rain which fell then. After this, to the end of the month, except on the 28th, there was a fresh wind every day, but variable in its direction; the West was the most prevalent wind. On the 28th there was a storm with strong North-East wind, which blew nearly all the day.

The mean temperature of March was  $72.4^{\circ}$ , and of April  $80^{\circ}$ . The mean daily maximum of March was  $88.8$ , and of April  $95^{\circ}$ . The mean nightly minimum in March was  $56.7$  in April  $65.8$ . These numbers show a considerable advance in temperature in April as compared with March. The extreme depression of temperature which took place on the 12th, taken in connection with this advance over the whole month of April, is worth notice. The monthly mean of April 1866 was  $77.9^{\circ}$ , during the day  $95^{\circ}$  (the same as this year), during the night  $61.5^{\circ}$ . The nights of April last year were therefore cooler.

Table No. 2.

*Progress of Cholera from Hurdicar Fair, where it appeared on the 12th April 1867 and was spread by the Pilgrims over the country.*

No. of Boats.	No. 1.—WEST—TO MOULTAN, via UMBALLA and UMBUTHER. NORTH-WEST—TO PESHAWAR from UMBUTHER.					No. 2.—SOUTH—WEST—TO HISSAR, via KURNAUL.					No. 3.—SOUTH—TO ALLAHABAD, via MEERUT.					No. 4.—SOUTH—EAST TO OUDH, via BAREILLY.				
	Pilgrims.		Residents.		Distance in miles from Hissar.	Pilgrims.		Residents.		Distance in miles from Hissar.	Pilgrims.		Residents.		Distance in miles from Hissar.	Pilgrims.		Residents.		Distance in miles from Hissar.
	Names of District or Town.	Date of first case.	Duration of Epidemic.	Distance from Hissar.		Names of District or Town.	Date of first case.	Duration of Epidemic.	Distance from Hissar.		Names of District or Town.	Date of first case.	Duration of Epidemic.	Distance from Hissar.		Names of District or Town.	Date of first case.	Duration of Epidemic.	Distance from Hissar.	
1	Hindwar ... .. Kunkul ... .. Jawalpore ... ..	12th April 13th " 27 13th " 13	27 29 13	80	2	Hindwar ... .. Kunkul ... .. Jawalpore ... ..	12th April 13th " 27 13th " 13	27 29 13	30	2	Hindwar ... .. Kunkul ... .. Jawalpore ... ..	12th April 13th " 27 13th " 13	27 29 13	30	2	Hindwar ... .. Kunkul ... .. Jawalpore ... ..	12th April 13th " 27 13th " 13	27 29 13	30	2
10	Santal Serai Roorkhee ... ..	13th " 13 13th " 12	13 17th April 41	80	13	Santal Serai Roorkhee ... ..	13th " 13 13th " 12	13 17th April 41	80	13	Santal Serai Roorkhee ... .. Jawara Roorkhee ... ..	13th " 13 13th " 24 17th " 29 13th " 29	13 24 29 17th April 41	30	14	Nujeebabad ... ..	13th " 27	27	49	14
23	Bagwanpore Futteejore ... ..	13th " 15 17th " 6	15 6	18	23	Bagwanpore Futteejore ... ..	13th " 15 17th " 6	15 6	18	23	Munjour ... ..	17th " 25	25	30	29	Alkharabad ... ..	20th " 10	10	10	29
30	Kyaspore Saharaspore Debrah ... ..	15th " 13 15th " 1 15th " 6	13 17th " 31	31	30	Jubbarkera Deoband Poor ... .. Saharaspore ... ..	16th " 10 14th " 27 15th " 30 14th " 18	10 27 30 17th " 18	18	30	Poor Deoband ... ..	15th " 3 15th " 26	3 26	18	30	Barrapora Kerampore Nujeebabad Mundaw ... ..	14th " 48 17th " 48 13th " 48 17th " 29	48 48 48 29	48	30
40	Massore Chikana Sasana ... ..	15th " 27 16th " 22	27 24	24	40	Budgoen ... ..	20th " 1	1	24	40	Chapur ... ..	15th " 3	3	24	41	Nethore Noorpoor Aserghur Bisore ... .. Changore ... ..	13th " 45 13th " 45 13th " 45 13th " 45 13th " 45	45 45 45 45 45	45	41
50	Rampore Nukere Gungah ... ..	21st " 24 18th " 14 18th " 12	24 14 12	18	50	Mouffernagpur Nuker ... .. Lucknow Gungah ... .. Kamla ... ..	14th " 17 14th " 23 16th " 18 24th " 17	17 23 18 17	18	50	Mouffernagpur Jailabad Jhama Bhow Katorwe ... ..	14th " 17 14th " 21 14th " 24 14th " 23	17 21 24 23	18	50	Daranagar Sherkote Sodana ... ..	16th " 30 17th " 30 16th " 30	30 30 30	30	50
60	Jaggadree ... ..	15th " 23	15th " 45	45	60	Gungah ... ..	16th " 68	68	45	60	Shahpur Shahpur Gadarpore ... ..	14th " 17 14th " 21 14th " 11	17 21 11	45	60	Bareilly Bareilly Chandpore ... ..	3rd May 26 14th " 17 14th " 39	26 17 39	26	60
70	Chappur ... ..	20th " 7	25th " 30	30	70	Chappur ... ..	20th " 7	25th " 30	30	70	Kashila Roorkhee Dowaler Roorkhee ... ..	17th " 22 18th " 11 21st " 21 25th " 6	22 11 21 6	30	70	Kant ... ..	24th " 15	15	15	70
80	Narainghur ... ..	15th " 29	15th " 45	45	80	Kurmai Daher ... ..	18th " 21 19th " 21	21 21	45	80	Chhapra Meerut Bisore ... ..	24th " 11 17th " 11 20th " 8	11 11 8	45	80	Chhapra Meerut Bisore ... ..	24th " 11 24th " 11 24th " 11	11 11 11	45	80
90	Umballa ... ..	16th " 23	16th " 45	45	90	Dharunghat ... ..	20th " 94	94	45	90	Begunabad Kunkul Moradnagar ... ..	20th " 7 20th " 1 20th " 4	7 1 4	45	90	Moradabad ... ..	20th " 27	27	27	90
100	Cherundghur Morinda Kaika ... ..	17th " 22 18th " 13 19th " 16	22 23rd " 16 3rd May 16	38	100	Sonowet Sonowet Gohana ... ..	18th " 35 22nd " 10 18th " 10	35 10 10	38	100	Hanpur Bazpur Ghazeeabad Sangana Sadara ... ..	19th " 8 22nd " 23 18th " 10 25th " 18 19th " 6	8 23 10 18 6	38	100	Meerut Gungahat ... ..	20th " 23 24th " 4	23 4	23	100
110	Bopar ... .. Kunawale Dughai Marwar Sodhath ... ..	25th " 9 25th " 1 25th " 7 25th " 109	25th " 34 25th " 2 25th " 1 25th " 109	34	110	Delhi ... .. Rydat Rydat Munaghat ... ..	16th " 67 21st " 68 26th " 22	67 68 22	34	110	Delhi Bhindabhar Bhow ... ..	19th " 9 19th " 9 21st " 9	9 9 9	34	110	Bahara Meerut Bisore Futteejore ... ..	19th " 24 22nd " 8 18th " 7 19th " 11	24 8 7 11	24	110
120	Cherundghur Morinda Kaika ... ..	17th " 22 18th " 13 19th " 16	22 23rd " 16 3rd May 16	38	120	Georgian Chestra ... .. Basant Jaggur Sangpur ... ..	16th " 64 25th " 1 26th " 1 23rd " 1	64 1 1 1	38	120	Georgian Koonpur Sodana ... ..	22nd " 64 25th " 34 26th " 27	64 34 27	38	120	Kalepore Bisore Tered village Merely ... ..	22nd " 5 25th " 4 26th " 25 18th " 37	5 4 25 37	5	120
130	Cherundghur Morinda Kaika ... ..	17th " 22 18th " 13 19th " 16	22 23rd " 16 3rd May 16	38	130	Hanpur Furreeknagar ... ..	20th " 23 22nd " 23	23 23	38	130	Allypore ... ..	20th " 30	30	38	130	Bahara Bisore Nujeebabad Kutra ... ..	21st " 20 24th " 6 26th " 19 26th " 5	20 6 19 5	20	130
140	Cherundghur Morinda Kaika ... ..	17th " 22 18th " 13 19th " 16	22 23rd " 16 3rd May 16	38	140	Cherundghur Morinda Kaika ... ..	17th " 22 18th " 13 19th " 16	22 23rd " 16 3rd May 16	38	140	Cherundghur Morinda Kaika ... ..	17th " 22 18th " 13 19th " 16	22 23rd " 16 3rd May 16	38	140	Cherundghur Morinda Kaika ... ..	17th " 22 18th " 13 19th " 16	22 23rd " 16 3rd May 16	38	140
150	Cherundghur Morinda Kaika ... ..	17th " 22 18th " 13 19th " 16	22 23rd " 16 3rd May 16	38	150	Cherundghur Morinda Kaika ... ..	17th " 22 18th " 13 19th " 16	22 23rd " 16 3rd May 16	38	150	Cherundghur Morinda Kaika ... ..	17th " 22 18th " 13 19th " 16	22 23rd " 16 3rd May 16	38	150	Cherundghur Morinda Kaika ... ..	17th " 22 18th " 13 19th " 16	22 23rd " 16 3rd May 16	38	150

Table No. 2.

Progress of Cholera from Hurdwar Fair, where it appeared on the 12th April 1867 and was spread by the Pilgrims over the country,—(concluded.)

General distance from Hurdwar.	Direction on River.	No. 1.—WEST—TO MOULTAN, via UMBALLA AND UMBRITH. NORTH-WEST—TO PESHAWR FROM UMBRITH.					No. 2.—SOUTH-WEST—TO HISAR, via KURNAUL.					No. 3.—SOUTH TO ALLAHABAD, via MIEERUT.					No. 4.—SOUTH-EAST TO OUDH, via BIZPORE.				
		NAMES OF DISTRICT OR TOWN.	Distance from Hurdwar.	Pilgrims.		Residents.	NAMES OF DISTRICT OR TOWN.	Distance in miles from Hurdwar.	Pilgrims.		Residents.	NAMES OF DISTRICT OR TOWN.	Distance in miles from Hurdwar.	Pilgrims.		Residents.	NAMES OF DISTRICT OR TOWN.	Distance in miles from Hurdwar.	Pilgrims.		Residents.
				Date of first case.	Duration of Epidemic.				Date of first case.	Duration of Epidemic.				Date of first case.	Duration of Epidemic.				Date of first case.	Duration of Epidemic.	
200		Jallender ... ..	201	20th April	...	4th Sept.	Hissar ... ..	180	21st "	17	25th "	Akshad ... ..	181	30th "	22	...	Phulbeet ... ..	185	19th "	...	...
		Jagron ... ..	205	26th April	...	4th May	Rewarie ... ..	180	22nd "	...	...	Hattara ... ..	184	30th "	...	...	Almora ... ..	192	23rd "	...	...
		Barkote ... ..	210	26th "	...	12th "	Ferozepore ... ..	195	23rd "	...	...						Shahjahanpore ... ..	198	24th "	...	...
		Mehna ... ..	217	28th "	...	5th "	Roorkee ... ..	197	...	...	...										
220		Maga ... ..	224	27th "	...	...	Fattiahad ... ..	208	22nd "	16	26th "	Morha ... ..	205	...	...	26th "					
		Isakhan ... ..	228	28th "	...	...	Sira ... ..	210	22nd "	32	22nd "	Saidabad ... ..	210	19th "	...	...					
		Dugro ... ..	231	6th May	...	...						Agre ... ..	210	21st "	3	...					
												Secundra ... ..	216	...	...	28th May	8				
340		Moolkee ... ..	240	4th "	...	...	Rance ... ..	222	...	...	1st May					...					
		Gull ... ..	245	24th April	...	24th April															
		Ferozshah ... ..	248	13th May	...	23rd "															
		Unosir ... ..	255	21st April	...	...															
		Ferozepore ... ..	258	24th "	...	24th "															
260		Lundey Bora ... ..	280	12th May	...	...	Dubwalla ... ..	245	22nd "	...	22nd April	Mynpoore ... ..	243	24th "	...	...					
		Haje Watto ... ..	286	19th "	...	...	Mulloul ... ..	251	24th "	...	1st May	Ravash ... ..	277	...	...	...					
		Doda ... ..	290	20th April	...	...						Pattighar ... ..	278	...	...	...					
		Lahore ... ..	291	24th "	...	...															
		Seakote ... ..	296	5th May	2	7th "															
300		Jhoj Kulan ... ..	300	28th April	1	30th April	Jeyore ... ..	280	24th "	...	28th April	Cawspore ... ..	348	25th "	...	...	100				
		Bekka Jhoj ... ..	308	...	...	12th May															
		Kangra Walla ... ..	308	...	...	18th "															
350		Montgomery ... ..	387	25th "	6	30th April															
		Jhelum ... ..	395	...	...	...															
400		Shapire ... ..	406	...	...	...	Deole ... ..	420	...	...	20th June										
		Jhang ... ..	410	...	...	...															
		Rawal Pindee ... ..	461	5th May	1	1st July															
		Gooranwalla ... ..	480	...	...	7th May															
500		Murre ... ..	500	26th April	...	29th June															
		Moolan ... ..	508	...	...	11th "															
		Hazara ... ..	510	...	...	16th "															
		Dera Ismail Khan ... ..	515	...	...	...															
		Attock ... ..	522	...	...	21st July															
		Nowshere ... ..	540	...	...	29th June															
		Dera Ghazee Khan ... ..	548	...	...	...															
		Kohat ... ..	543	...	...	...															
		Peshawar ... ..	561	...	...	12th "															
700		Cahool ... ..	740	...	...	16th July															

SIMLA,  
The 12th September 1867.

JOHN MURRAY, M. D.,  
Inspector General of Hospitals, Upper Provinces.