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REPORT

ON THE ATTACK OF EPIDEMIC CHOLERA IN AGRA AND CENTRAL INDIA DURING THE YEAR 1861.

BY

JOHN MURRAY, M. D.,

DEPUTY INSPECTOR GENERAL OF HOSPITALS, AGRA CIRCLE.

There was great deficiency of rain, during the rainy, season, last year ; and a consequent very scanty crop of the heavier grains ; and the " Mahawut" or rain which usually falls at the end of the year, was wanting. This last is required, in addition to irrigation to secure a good crop of wheat, barley and gram in the cold season, which form the staple food of the people. The consequence of the deficiency of rain in both seasons, was famine over N. W. Provinces and part of the Punjab. During famine seasons stores of grain are opened by the natives, which have been kept closed for many years. I saw one of these "khoes" or grain pits that contained 20,000 maunds of wheat, which had been stored in the centre of the Fort at Bhurtpore for 25 years ; the contents of which were distributed to the people. The grain had a disagreeable smell ; but with the exception of the lower stratum, which was black, it was eaten eagerly. Numerous pits of old standing viz. from 7 to 15 years, were opened at Agra, and in other parts of the country, and the contents readily consumed by the people, mixed with fresh grain ; some pits were also opened in Cantonments, of 23 years standing, in which, however, the contents were so rotten that they were ordered by the authorities to be thrown into the river. This condemned grain was collected, by the starving people from the river, or plundered from the carts that conveyed it there. Wheat keeps well in dry places for from 3 to 5 years only. But barley, jowar and gram keep for 10 years without injury.

The immediate effect attributed by the people to using this damaged grain, was wasting of the body, with a tendency to purging, when wholesome food was resumed.

The weather, as in 1856, also a cholera year, was variable with easterly winds, and clouds in the earlier part of the hot season, and there was very little of the regular hot west wind. The rains commenced on the 18th of June, and continued, with few intervals of clear weather, until the middle of September. The fall of rain has been greater, and the crops have been more luxuriant, than in any year since I have been in India. The bajra crops usually from 5 to 6 feet high, were in many places from 12 to 14 feet high, with grain heads from 14 to 16 inches long. It was unusually cloudy during the rainy season. There was much lightning and thunder, and the falls of rain were frequently very heavy and partial ; for instance, there was a heavy fall of between two and three inches in Cantonments on the 30th May, and the 26th July, and only a slight shower at the Central Jail, where the meteorological registers, that accompany this report, were kept by

Dr. Walker. The same Officer reports that the ozonometer has all throughout the Epidemic shown a high rate, much higher than last year, viz :

MEAN AMOUNT OF		
	1860.	1861.
June	1.30.	3.20.
July	1.40.	3.20.
August	1.10.	1. 9.

The health of the Troops and Prisoners had been very good, during the cold and hot seasons. Previous to the out-break of Cholera, there were comparatively few cases of coup de soleil in May and June at Agra, and very little fever at Agra or Gwalior, Diarrhœa was very rare, and there were few cases of Sporadic Cholera, from the termination of the Epidemic attack in September last, till it re-appeared in July. There were three marked and fatal cases in the 42nd Royal Highlanders immediately after the Rains set in on the 21st, 28th, and 29th of June; but there was no Diarrhœa, and no fresh case in that corps till the 14th July, so I have considered these as Sporadic cases.

The present Epidemic of Cholera first appeared in the beginning of May in the village of Ghopalghur, about 40 miles North West of the City of Bhurt-pore; but it is also said, there were cases at Kaitwar, eight miles off, in the end of April. It extended in a Northerly direction and reached the City of Muttra on the 1st June (the first case in Cantonments was on the 16th July) and Goorgaon on the 16th June, and Delhi on the 6th July; from whence it extended to Meerut on the 6th July, Umballa the 15th July, and Lahore 7th August. This is the course which I anticipated the disease would follow, during the hot and rainy seasons, and I consider it to be the continuation of the Epidemic attack of 1860, on which I reported last October. This course is also analogous to that followed by the previous Epidemic attacks of Cholera in 1851 and 1856. It is of the utmost importance to watch the progressive movement of the disease over the country, its limited duration and its residence in particular localities, as indicating removal from the locality, whilst the disease is running its course. Our power of treating the disease, when fully developed, by medicine is often inefficacious and can only be relied on in the premonitory stages. The power of *change of locality*, as an invaluable remedy, in moderating the loss of life, has been confirmed during the present Epidemic. By extending this mode of treatment, *by moving the Troops from the station*, on the approach of the disease, or on its first appearance, the attack might be avoided or rendered feeble. This will be practicable when Railways are available, which it is hoped will be soon. In most instances the Troops might return safely in a month. Had this means of conveyance been available, the European Troops should have moved from Agra to Cawnpore, on the 10th July, and returned on the 12th August; and the Troops moved from Morar on the 25th July, and returned the 1st September. Appended is a report from Captain Walter, Political Agent at Bhurt-pore, shewing the commencement and early progress of the disease, with a Map of the Bhurt-pore territory.

The Epidemic extended, in a Westerly direction, to Ulwar, Jeypore and Ajmere. The disease appeared to radiate from Ghopalghur, in the Bhurt-pore territory, *as a centre*, just as it radiated from Agra, in 1856. The peculiarity in the present Epidemic, consists in its returning, in a Southerly direction, to Agra and Gwalior, *Stations that had been affected during the previous year*. This may be attributed to the existence of the *Famine* which pervaded, N. W. Provinces, during this year. The disease appeared first at Muttra and Agra, amongst the starving population, collected at the famine kitchens which were established for the purpose of feeding them. The first case admitted into the Thomason Hospital, came from the famine kitchen at Shabgunge,

in the suburbs of Agra, on the 11th of June; and it was reported that the man had come from Muttra. At the Kundowlie kitchen 10 miles North of Agra, there were 23 deaths on the 13th June. It was visited by Assistant Surgeon Currie on the 14th; and he died from cholera, on the 15th. The disease disappeared from the kitchens in the district, after the rains set in. It showed itself in the City of Agra, in the end of June.

Cholera appeared in the Central Prison, on the 6th July; and became very severe on the 8th and 9th; disappearing on the 10th of August.

The first case amongst the Europeans in Cantonments, was in the 107th Regiment, on the 7th July; there were 2 more cases on the 11th. The first case in the 42nd Royal Highlanders, was on the 14th July. The disease reached its height, in both Regiments on the 25th July; and gradually subsided until the 14th August.

The first case in the 42nd Regiment Native Infantry, occurred on the 18th July. There were only 5 fatal cases in this Corps; and 2 in the Police Battalion.

At Gwalior the disease appeared amongst the natives, in the *Lushker* and City, in the middle of July, and proved very fatal. The first case amongst the Europeans in the Cantonments at Morar, was in a child of Her Majesty's 27th Regiment, on the 22nd July. It appeared amongst the men of that Corps, on the 25th, and on the same day in the Detachment of Her Majesty's 52nd Light Infantry, in the Fortress of Gwalior; and in the Artillery on the 29th. There were 3 Native Corps, and the Camel Corps, at Morar, during the Epidemic, but there was not a single case of Cholera amongst them. There was no Cholera amongst the European or Native Troops, at the Stations south of Gwalior, viz., Seepree, Jhansie, and Lullutpore.

The symptoms of the disease were analogous to those that appeared last year. They were similar in all the stations, and alike in Europeans and Natives. The disease was very intense, running its fatal course often in a few hours; and in some cases, with little vomiting or purging. In many cases, the attack commenced about three o'clock A. M., and the disease had a marked periodical type, particularly as the season advanced. Previous to the Epidemic there were scarcely any cases of Diarrhœa, but during its prevalence, there were few who escaped attacks of Diarrhœa, more or less severe. Diarrhœa formed the first stage of the disease, in most cases; which if not checked, was followed by congee stools and collapse. This stage lasted for several days, in some cases, in others only half an hour: collapse coming on suddenly, with profuse congee evacuations, cramps, livid, congested shrunk eyes, whispering voice, craving for water, diminishing powers of life, and increasing restlessness, sinking, or with an effort at reaction at intervals of twelve hours. When reaction took place, the evacuations became dark, and the urine, which had been suppressed flowed. The evacuations by degrees became lighter and less frequent. In some cases, when collapse had continued long, low typhoid fever followed; in others, there were violent head symptoms particularly in those who had used Chloroform. In others Diarrhœa continued troublesome; some cases were followed by boils; but in most instances, as the symptoms of the disease subsided, only debility remained. Many of the cases had afterward attacks of ague and fever till the cold season advanced.

Diarrhœa or Dysentery or any increased action of the bowels by purgative medicines, or undigested food, were very liable to be followed by watery Cholera purging and collapse. Nervous prostration from previous disease, mental fear, or bodily fatigue, and the exhaustion which follows over excitement from drink, predispose the person to the development of the disease. Fresh arrivals from unaffected stations, to one where Cholera prevails, are peculiarly liable to attack. During the prevalence of the Epidemic the disease may be

developed, independently of contagion; and when this influence does not prevail, as in sporadic cases, the disease is not transmissible by contact; but during the Epidemic attack, the disease may be communicated by contact, or by the vicinity of Cholera evacuations. The disease may be imbibed by the system, and evacuated or digested by the organs, where the *vismedicatrix natura* is healthy and strong; but when the powers of nature are feeble, they are overcome by the poison, and Cholera is developed.

There was a marked difference in the Military Cantonments in this, and in all former attacks that have come under my observation, between the number of European and Native Troops attacked, and also between the number of Native Troops, and prisoners; the Native Troops suffering slightly, whilst the Europeans and Prisoners, suffered severely. The locality is the same, and the ordinary food the same, at the same season, but the Europeans and Prisoners use *Laterines* and the Sepoys do not. When the Cholera raged in Calcutta, the sailors in ships anchored opposite the common sewers, were affected with the disease, until anchoring in that position was forbidden. Changing the Camping ground, or Barracks, and thus leaving the vicinity of the evacuations, appears to leave the emanations and the disease behind.

The advantage of moving into Camp, as a prophylactic against Cholera was very decided, during the present Epidemic. The Prisoners were first moved. The disease became severe on the 8th and 9th July, (there were 22 admissions and nine deaths on the 9th.) On the 11th, 850 Prisoners went into tents on the Poohyah Ghat Road about three miles off and changed ground on the third-day: and the convalescent depôt at Secundra, four miles off, was increased from 250 to 300. There were only four cases among the Pooyah Ghat party, and one from Secundra.

The disease rapidly subsided in the Jail; and the Prisoners returned on the 18th. The commencement of the attack was as severe as last year, and the disease equally intense; but the mortality was only 2.23 per cent. *viz.* 66 out of nearly 3,000 Prisoners (2,959); whereas last year the mortality was 8.33 per cent. *viz.* 172 out of nearly 2,000 (2,065). They were moved into Camp at a *later period* of the last attack, which was the probable cause of their greater mortality. Dr. Walker attributes the immunity of the men, in Camp, to their being *healthy*; but as the most *weakly* men *viz.* the *convalescents* suffered comparatively less, both at Secundra, and after their return to the Jail, and as only five *patients* in Hospital out of 525 were attacked, this opinion has not much weight.

The disease became severe, in Cantonments, on the 24th and 25th July, (there were nine deaths on the 24th and eight on the 25th.) The Troops would have moved out into Camp on the 26th, but it poured down incessant rain. It rained on the 27th, but during a break in the morning, the 42nd Royal Highlanders marched to Secundra (eight miles) and occupied the corridors of Akbar's Tomb. They moved into tents on the 30th. There were two fatal cases on the day they moved out, two that night, and one case the next day. It may be fairly inferred that these men *brought the disease* with them. There were only two more fatal cases in Camp till they returned to Cantonments on the 13th August. The march of the 107th was similarly delayed till the 27th. The men went into the side buildings of the Taj two miles off. *There was no case of the disease in this party for three days.* They slept in their tents, about two miles off after the fourth day; but resided in the Taj Gardens during the day. There was only one fatal case before they returned to Cantonments, on the 14th August. Each of the men got one of the Cholera pills, and an extra glass of grog, the night they moved out of Cantonments; they said they wanted another pill next night, as they had not had such a good night's rest for many days. It was not

given, as there had not been a single case during the night or day ; but it would have been allowed, had the disease continued severe. The disease continued, in a moderate degree, amongst those who remained in Cantonments, in Hospital, or on duty on the sick, and in the Fort. There was an exacerbation of the disease in the Hospital, on the 31st, The men were moved out of the Hospital into a Barrack next day, and there were *no fresh cases* amongst them.

The camp selected for these occasions, should be pitched on high, dry, ground, and the men's cots should always be supplied, and only eight put into each tent.

The period of attack rarely exceeds a fortnight before it begins to subside. If this period can be *tided over* by prophylactic and preliminary treatment in Barracks, and the men's spirits keep good, they should remain in Barracks. But should the disease increase, and the mortality exceed one a day, or should the men get *shaky*, the troops should be moved into camp, at least a mile out of cantonments in the direction from whence the disease has advanced and change ground every second or third day. Moving into camp in the hot or rainy season, is dangerous, and very disagreeable. It is only justifiable as a means of avoiding a worse, and more certain danger.

On the approach of the Epidemic to the vicinity of Agra, particular attention was paid to all the conservancy arrangements. The old drains were cleared out, and fresh ones constructed. The men were carefully warned to avoid using unripe fruit, bazar pork, and any kind of food they found they could not digest easily. They were recommended to be moderate, in the use of alcoholic liquids, which was not always attended to when the disease became bad. They wore flannel belts, and changed wet clothes, when practicable. Sites in the vicinity were selected, to which the Troops would be moved, should the disease become severe ; and the Commissariat Officer instructed to be ready to move the camp equipage, at a short notice. When the disease appeared, native guards were substituted for European, where practicable, shooting matches, dancing, and games of all kinds were encouraged. The men were carefully inspected by the Medical Officers morning and evening, and small doses of Quinine and Cherytta, were given in the morning, with the effect of improving the tone of the stomach and digestion.

The most important prophylactic was the *early* use of the Cholera Pill, immediately the bowels became out of sorts, *without obliging the men to go to Hospital*. There is a natural antipathy to being sent to a Cholera Hospital, which leads the men to conceal their complaint, till the disease has advanced too far, for Medical treatment. The Pills were distributed to the Non-Commissioned Officers, in each Barrack, with instructions to give one to every man who asked for it, or *who went to the rear after gunfire at night ; and when a man went second time to give another pill, and send him to Hospital*. The first pill checked many cases, that if neglected, would have progressed to collapse. The men had confidence in them, and were more willing to go to Hospital, if the disease continued. The second pill kept the disease in check, until the Medical officer ordered more active remedies. This is an exceptional mode of treatment of soldiers, but this is an exceptional disease. The **EARLY** exhibition of the remedy is of essential importance, when half an hour's delay may allow the disease to advance beyond remedy. The men should be encouraged to tell the Doctor the effect of the pill, who will know something more is required should the stools continue *white*, though not frequent. There are many remedies, confidently recommended, as valuable in this early stage. Calomel and Opium, Brandy and Opium, Chloroform, Sulphuric acid, &c., &c. I prefer the pill, as being a efficacious remedy, convenient for distribution, keeping well, easily distributed and

not likely to do harm, if taken when not required. The natives have confidence in them, and have used several *lacs* of them during the late Epidemics and the European soldiers take them with confidence. They are composed of one part Opium, two parts black pepper and three parts asafœtida made into pills of five grains each.

The proportion of Patients in Hospital from other diseases, who are attacked is great. In these, various predisposing causes are in operation, as disease, debility and anxiety. The waiting men are exposed to unusual fatigue, and anxiety, as well as contagion, and suffered much. The effect on the native Hospital attendants is variously reported. In the Thomason Hospital, five out of eight sweepers were attacked, and almost every one of the native doctors, and attendants, had premonitory symptoms, which were checked by the Cholera pills. In the Central Prison, neither the Patients in Hospital, nor the attendants, suffered more severely than the other prisoners; though in the Epidemic of 1856 the Hospital sweepers suffered very severely. The native attendants in the European Hospitals did not suffer severely.

The two European Corps, at the same station, in which there was the most marked difference, were Her Majesty's 27th and 52nd Regiments at Gwalior. In the former the mortality exceeded 16 per cent., and if choleraic diarrhœa be included 17.61, per cent. in the latter it was only 3.63 per cent. including both forms of the disease. The former were quartered in single storied buildings on low ground; the latter on the top of a Rock rising 300 feet above the surface of the country. Both Barracks are new, and similarly constructed, equally clean, and well ventilated, and every attention paid to diet, exercise and cleanliness. The chief difference appears to be that the Corps that suffered most was lodged in low ground and *slept under the line to which miasma is supposed to extend in Tropical climates, whilst the other was above the miasmatic influence.* In this corps the disease appeared, and the individual cases were as virulent but only one man died for five who suffered in the other corps.

At Muttra, all the preliminary arrangements were made, the encamping ground selected, and the preliminary treatment in Barracks adopted, when the disease appeared in Her Majesty 20th Light Dragoons. The period was *tided over without moving*; there were only 23 cases, of whom 4 proved fatal and there was no fatal case in the Horse Artillery.

At Gwalior the disease become severe on the 25th July, on the 31st Her Majesty's 27th moved into tents close to the Barracks with slight benefit. They then moved into Camp on a high dry ridge 4 miles off on the 8th August with benefit. Here they remained until I arrived on the 16th, when on account of their long halt and of the disease continuing, the camp was changed, to another ridge about 4 miles on the opposite side of cantonments. It was intended that the men should sleep one night in Cantonments, to allow their cots to be transported to the new ground; but in consequence of the want of carriage they were detained a second night. This was followed by a considerable increase of the attack. The disease however rapidly diminished in the Camp, which was now changed every 3 or 4 days; but it continued in the Hospital, and amongst the men detained on duty in Cantonments. The mortality amongst those admitted into Hospital was most distressing, out of 211 admissions only 25 had been discharged while 33 remained under treatment on the 20th August. There was some needless delay, in removing the sick from the Hospital, into the Barracks selected for them, which though fumigated and white-washed, "wanted sweeping and some of the Punkah ropes were broken." This was through the remonstrance of Surgeon G. Peacock "who considered the change as premature, and more likely to do harm than good." He also

objected to the preliminary treatment, by the Cholera Pill in Barracks without requiring the men to be taken into Hospital. The mortality in this Corps exceeded 17 per cent. In the Artillery whose Barracks were contiguous, the disease was *tided over* without a move. The preliminary Barrack treatment was assiduously used, they lost 13 from both forms of the disease equal to 4.96 per cent.

The importance of the prophylactic, and preliminary treatment, of this disease, has been more forcibly impressed on my mind, by each successive epidemic attack, that has passed under my observation; more particularly in the severe attacks at Agra in the years 1851, 1856, 1860 and confirmed by what has taken place, in the present attack. *The battle must be fought before collapse supervenes*; after that stage, the power of medicine for good or for evil, is very limited: hence has arisen the vaunted power of opposite remedies. *Reaction is an effort of nature*, analogous to the reaction, that follows the cold stage of ague; in which more extended experience has proved the want of efficacy, if not injury, of employing remedies, apparently called for by present prominent symptoms. These two diseases, cholera and ague, are in some instances combined, more especially in the rainy season; inducing a periodical type in the symptoms of cholera, with intervals of 12 hours; and often commencing between 2 and 3 o'clock in the morning. This formed the peculiar characteristic of the present epidemic, as previously mentioned.

The influence of *trees*, on the origin, or dissemination of cholera, has attracted much attention. In the vicinity of the Barracks, in Cantonments and at the Jail in the Civil Lines, where the disease was most severe at Agra, there were *no trees* whilst the Officers Bungalows were surrounded by gardens and trees and the Officers suffered slightly. A similar remark applies to the Barracks, and Officers' Bungalows, at Morar. The Barracks occupied by the Detachment of the 52nd, in the Fortress of Gwalior, situated at the bare top of the hill, had several cases, as intense though not so numerous, as in the neighbouring Cantonment of Morar. At Meean Meer, where the disease has been *most fatal*, both now, and on former occasions, there are *no trees*. The purifying action of the leaves, during the day, is beneficial, under ordinary circumstances, in removing ammonia, and fœtid gases, and supplying oxygen, whilst the carbonic acid, given out during the night, does not prove injurious, where the circulation of the air is free; nor under these circumstances, does it appear to assist the action of the cholera poison.

The Cholera poison appears capable of being disseminated through the air, and of being communicated to the body through the lungs during respiration, and through the skin, by absorption. Its primary action appears to be on the sympathetic nerve, diminishing its power, when *moderate* in degree; and paralysing it when *intense*, or when the resistance is feeble from debility or exhaustion. When the system is vigorous it appears capable of digesting, or eliminating the poison, through the organs employed to purify the blood, viz., the liver, kidneys, and lungs. Any cause that diminishes the action of these organs, favours the developement of the disease. The mental power and muscular action, continue unimpaired in the earlier stages of the disease. The involuntary muscles of the intestines continue to act and suffer spasms, like the voluntary muscles, long after the secreting functions, of the sympathetic nerve, have ceased. The feeble action of the heart, though influenced by prostrated nervous energy, is modified by the nature of its contents, viz., the blood. The retention or non-elimination of the impurities of the blood, during collapse, renders it dark, fluid, and non-stimulant to the heart; but even in the most advanced

stages, the transfusion of a *saline solution* into the veins, will restore the action of the heart and the red colour to the blood—though it will not cure disease. When nature fails in digesting or decomposing the poison, her next effort appears to be to throw it off, by purging and vomiting. This *beneficial* character of the symptoms of the disease, is apparently contradicted, by the action of the remedies found most beneficial. During the prevalence of the epidemic a strong purgative, particularly if *saline*, will induce congee stools and collapse: whilst the best remedies check the preliminary diarrhœa; but this does not cure the disease, if the evacuations continue white, and the secretions of the liver and kidneys be not restored. The mere torpor, and paralysis of the muscular coat of the intestines, induced by a narcotic, though it may not *cure* the disease, is *useful* in many cases, By diminishing pain and relieving spasms, it prevents exhaustion, and by giving rest, allows the system to recruit and digest the poison. In those cases where the diarrhœa was caused by indigested food or irritating contents, and when these had been evacuated, no further remedies would be required. This explains the action of the Cholera Pills recommended in the preliminary treatment, in the Barracks, and all out-stations; how far they are to be trusted, and when other assistance is required.

The treatment *during Collapse* should be directed to *assist nature to throw off the disease* by supporting the action of the heart, and restoring the functions of the sympathetic nerve, in promoting the secretions of the liver and kidneys. In some cases from the first, all remedies appear powerless; and many remedies in this stage are merely palliative, if not injurious. The most powerful are *inert until reaction ensues*. This is an effort of nature, often feeble, and flickering, and easily overpowered or diverted into dangerous channels, by the remedies which were previously inert. I have endeavoured to impress on medical officers, that their energies are best employed, in preventing the attack, or treating its earliest stages: that half the energy fruitlessly employed, in resuscitating a collapsed case, might prevent many other cases from advancing, to the same hopeless stage.

Of the individual remedies during collapse, hot saline enemata, frequently repeated are useful in relieving cramps, supporting the pulse and promoting reaction. The periodical type particularly during the rainy season indicates the use of Quinine. The absence of bile in the evacuations indicates the use of Calomel. Soda, or ammonia in small quantities, given in Iced water, was very agreeable, and not injurious. Frictions with Turpentine Liniments, Sinapisms and hot bottles gave relief. *The bed pan must be used in all cases*; as raising the head, and the exertion of sitting up is followed by fatal syncope in severe cases, and by exhaustion which is injurious in all. Chloroform and Chlorodine relieve sickness, and vomiting, with apparent advantage, in the earlier stages; but in severe cases, where reaction followed, there was frequently fever, with dangerous head symptoms. The exhibition of opiates, except in very small doses, is dangerous. The action of Alcoholic stimuli, as Brandy, Champagne, Wine, or Beer is very questionable *during collapse*, and when reaction has taken place, the greatest caution and moderation are required, to prevent injurious effects. The Chlorate of Potash was tried in draughts, and enemata, and by sub cutaneous transfusion, without any apparent beneficial effects. Sulphuric Acid was used extensively, and reported on favorably, by Garrison Surgeon T. S. Lacy: but other Medical Officers did not find it useful. Small bleedings to the extent of 3 or 4 oz. were said to be useful, by Civil Surgeon G. R. Playfair, when the pulse at the wrist was perceptible and the blood would flow; but it could not be got to flow, in very bad cases.

The *cessation* of vomiting or purging was not always a favorable sign, and when the dark evacuations appeared it was injurious to *check* them. The diagnosis is unfavorable until the urine flows freely, and the voice is restored, Sound natural sleep is a good sign. Alimentary food in the shape of soup &c., during collapse when the liver and kidneys are not acting, and the function of digestion is suspended, is only useful from the quantity of salt water it contains, the other constituents are likely to prove injurious. When reaction has taken place, it should be given in small quantities, and at short intervals. In some cases when great irritability of stomach remains, the exhibition of nourishing enemata, is highly useful. Irritability of stomach appears to depend, in some instances, on defective secretion of urine, in other cases on inflammation of the stomach, caused by the disease, or the remedies employed. In these cases a small blister to the Epigastrium is useful. In some cases where Diarrhœa continued, oil of turpentine was beneficial.

When *reaction* takes place, the cure is completed through the *action of the liver and kidneys*, Calomel combined with a carminative is useful; and small doses of Quinine are very valuable.

Strength is regained by a regulated diet with a small quantity of Wine, or Beer; gentle exercise and change of air. In very severe cases, slight but persistent attacks of aguish fever are frequent, till the advance of the cold season; in these cases change of air into camp is very beneficial. The Troops at Agra have continued very sickly up to this period, with a considerable number of feverish cases in Hospital, and a large convalescent list unfit for duty. It is proposed to move them into camp when the ground gets dry, and the days are a little cooler.

The conduct of the Medical Officers during these trying times deserves the favorable notice of His Excellency the Commander-in-Chief. To me it was most gratifying, to see the earnest zeal with which they did their duty and co-operated in carrying out the arrangements for the comfort, and care of the sick. Particularly the constant kind, care and unwearied zeal of Surgeon Major C. M. Henderson, of the 107th Regiment and Surgeon Major R. Whittall, of the Artillery Division. To the careful treatment and precautionary measures of Surgeon C. L. Cox Her Majesty's 20th Light Dragoons, the small mortality in that Corps may be attributed. Assistant Surgeon A. MacLean, of Her Majesty's 42nd Royal Highlanders, was most zealous and attentive till his health broke down, and he was succeeded by Surgeon J. McMun whose attention and care were praiseworthy. Surgeon J. W. Mountjoy, of the Artillery Division, was indefatigable in his attention, and care of the men in Barracks, and when sick, in Hospital. Assistant Surgeon H. Gogarty, Her Majesty's 52nd Light Infantry, was most zealous and attentive to his duties, Dr. Currie, Superintendent of Vaccination, visited the famine kitchen at Kundowlee, where the Cholera was severe, and had created great alarm. He died from the disease the following day, and Government lost a most intelligent and valuable servant. Assistant Surgeon Stewart, of Bhurtpore, also fell a victim to the disease. On the death of Dr. Currie, I intimated to Doctor W. Walker, Superintendent of the Central Prison, (who was on leave at Mussoorie,) the probability of the cholera appearing in his charge, and he rejoined immediately. But as the disease did not appear and the prisoners continued very healthy, up to the 4th July, he was permitted to return to Mussoorie on very urgent private affairs. He returned, however, as soon as he heard the disease had broken out; and devoted his usual energy and zeal, to the care of the sick. Civil Surgeon G. R. Playfair conducted his duties during his absence, and promptly carried out the recommendations, for the distribution of the prisoners, and zealously laboured in the Hospital. The Native Doctor Kooshiale Ram, was

indefatigable in his attention to the sick. The attention and assiduity of Mr. Apothecary, G. Hart, H. M.'s 107th Regiment, Mr. Apothecary C. Baker, and Mr. Steward R. S. Quinell, H. M.'s 42nd Royal Highlanders, and Mr. Officiating Apothecary John Sleigh, H. M.'s 27th Regiment, were reported to me as most praiseworthy, I would strongly recommend that these officers, and subordinates, be brought to the favorable notice of His Excellency the Commander-in-Chief.

On the approach of the disease, application was made to the Principal Inspector General of the Medical Department in Calcutta for additional medical aid. One Assistant Surgeon joined the 107th Regiment, the day after the first case appeared in it and one joined the 20th Light Dragoons the evening before the first case appeared. As the disease became intense, further Medical and Subordinate assistance, was procured by Electric Message, as the emergencies arose. They were hard worked, but when well managed their was no deficiency of attendance. The supply of medicines, and Hospital comforts, was abundant.

The suffering and loss of life has been great ; but that it has not been greater, is owing to the precautionary measures and to the prompt and energetic manner in which these were carried into effect at Agra by Brigadier Troup, C. B., and at Gwalior by Brigadier Welchman, C. B.

When the attack subsided at Agra, I went to Gwalior where it was very severe.

To the cordial co-operation of Colonel Priestly, Her Majesty's 42nd Royal Highlanders, and of Colonel Baumgartner, Her Majesty's 27th Regiment, in carrying out the sanatory arrangements, I am much indebted. Their anxious care for their men was most valuable. It is desirable that every Officer should be present with his Corps, on an emergency like an attack of Cholera which is more trying, to the British soldiers than forming a forlorn hope.

No reliable information is available, regarding the mortality from the disease, in the adjoining native cities. The opinions are conflicting ; on enquiry amongst my native friends at Agra, including the Chief Hukeem Nusseerooddeen, some say there have been 3000 deaths, others a greater number, and that all the wood stored for burying the dead, was soon consumed. The report from the Magistrate and Kotwal does not exceed one-third of the above mentioned number.

In the same manner the reports from the Vakeels, and officials connected with the Residency, and the bankers, and merchants, at Gwalior, varied from 1,200 to 3,000. The most remarkable circumstance was the total absence of the disease in the three *native Corps*, and Camel Corps, at Morar, (the Cantonment of Gwalior) when the *European Troops* suffered so severely, and when the mortality was so great six miles off amongst the *Rajah's Troops*, or the inhabitants of the Lushkur, and City of Gwalior.

The accompanying tables Nos. 1, 2, 3 and 4, show the daily admissions and deaths from Cholera and Diarrhœa during the months of June, July, August, and September, with the fall of rain and range of the Thermometer.

Tables Nos. 5, 6 and 7 show the admissions and deaths, in each European Corps, at Agra, Gwalior, and Muttra; with the proportion of deaths to strength and admissions ; and the dates of the first and last cases.

Table No. 8, is a similar return amongst the native troops, prisoners, and in the Thomason Hospital, where the sick from the famine kitchens at Shahgunge, and the City of Agra, were treated. The numbers daily attending the famine kitchen averaged 2,000, the people employed in charitable work, whose sick were also sent to the Thomason Hospital, varied in number. I have placed the whole strength at 3,000.

Table No. 9, shows the total admission and deaths amongst the Europeans and Natives :

Table No. 10, is a comparative table showing the relative admission and deaths from Cholera and Diarrhœa amongst the Europeans and Natives during the two attacks of Epidemic Cholera in the years 1860 and 1861.

JOHN MURRAY, M. D.,

Deputy Inspector General of Hospitals.

Agra.

Agra, 1st October 1861.

THE HISTORY OF THE UNITED STATES OF AMERICA

BY JOHN B. HENNINGSHAW

NEW YORK

1850

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M E M O :

TABLE No. 11, shows the admissions and deaths from cholera and diarrhoea at the station of Agra, on all occasions in which the disease has assumed an epidemic form since the year 1834. (The years 1837 and 1838 were famine years.)

Table No. 11 shows the admissions and deaths from cholera and dysentery at the station of Agartala on all occasions in which the disease has occurred at Agartala since the year 1854. (The years 1857 and 1858 were fatal years.)

M E M O

Table No. 11 shows the admissions and deaths from cholera and dysentery at the station of Agartala on all occasions in which the disease has occurred at Agartala since the year 1854. (The years 1857 and 1858 were fatal years.)

Table of Daily Admissions and Deaths from Cholera and Diarrhea amongst the Thomason Hospital at Apia during the Month of June 1861.

Apia 1st October 1861

Date June 1861.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total	Remarks			
Station	Infants																																			
	Boys																																			
	Boys and Girls																																			
	Boys																																			
	Girls																																			
	Boys and Girls																																			
Thomason Hospital	Men	1500																																		
	Women	1500																																		
	Children	500																																		
	Men																																			
	Women																																			
	Children																																			
Fall of Rain	Inches																																			
Thermometer	Degrees	103	73	77	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75			
	Range																																			

Mem. - There were 3 admissions from cholera in the 22 Highlanders on the 21st, 28th and 29th June and 2 deaths on the 21st and 28th not recorded in this Table.

(Signed) John Murray M.D.
Deputy Inspector-General
of Hospitals Apia West.

Table of daily Commissions and deaths from Cholera and Diarrhoea amongst the European Troops at Agra, Gwalior and Multan, and amongst the Natives in 24 M^o 2^d Regiment Native Infantry the Central Prison and Thomson Hospital at Agra, during the month of July 1861.

Agra 1st October 1861.

Date July 1861.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Remarks			
Agra Europeans	Officers	5																																			
	Men	116																																			
	Women	15																																			
Agra Natives	Officers	23																																			
	Men	664																																			
	Women	30																																			
Gwalior Europeans	Officers	16																																			
	Men	395																																			
	Women	33																																			
Gwalior Natives	Officers	7																																			
	Men	202																																			
	Women	26																																			
Multan Europeans	Officers	21																																			
	Men	953																																			
	Women	80																																			
Multan Natives	Officers	5																																			
	Men	266																																			
	Women	16																																			
Agra Natives	Officers	8																																			
	Men	136																																			
	Women	5																																			
Thomson Hospital	Officers	22																																			
	Men	265																																			
	Women	27																																			
Central Prison	Officers	4																																			
	Men	525																																			
	Women	74																																			
Total Europeans	Officers	86																																			
	Men	2923																																			
	Women	227																																			
Total Natives	Officers	4																																			
	Men	4921																																			
	Women	194																																			
Grand Total	Officers	90																																			
	Men	7453																																			
	Women	621																																			
Thermometer	Falls of Rain	Inches	0.11	0.11	0.13	0.5					0.23	1.41	1.00	0.20	0.22	1.10	1.15					0.31		0.16		0.21						11.33					
	Range	Degrees	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117			

(Signed) John Murray M. D.
 23. 1. 7. 1861. General of

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No. 1.

Table of Daily Admissions and Deaths from Cholera and Diarrhoea amongst the N. 4th 27th Regiment at Gwalior, during the month of September 1861.

Date September 1861.		Admission		Deaths		Total	
Day	Month	Admitted	Discharged	Admitted	Discharged	Admitted	Discharged
1	Sept	1	0	1	0	2	0
2	Sept	1	0	1	0	2	0
3	Sept	1	0	1	0	2	0
4	Sept	1	0	1	0	2	0
5	Sept	1	0	1	0	2	0
6	Sept	1	0	1	0	2	0
7	Sept	1	0	1	0	2	0
8	Sept	1	0	1	0	2	0
9	Sept	1	0	1	0	2	0
10	Sept	1	0	1	0	2	0
11	Sept	1	0	1	0	2	0
12	Sept	1	0	1	0	2	0
13	Sept	1	0	1	0	2	0
14	Sept	1	0	1	0	2	0
15	Sept	1	0	1	0	2	0
16	Sept	1	0	1	0	2	0
17	Sept	1	0	1	0	2	0
18	Sept	1	0	1	0	2	0
19	Sept	1	0	1	0	2	0
20	Sept	1	0	1	0	2	0
21	Sept	1	0	1	0	2	0
22	Sept	1	0	1	0	2	0
23	Sept	1	0	1	0	2	0
24	Sept	1	0	1	0	2	0
25	Sept	1	0	1	0	2	0
26	Sept	1	0	1	0	2	0
27	Sept	1	0	1	0	2	0
28	Sept	1	0	1	0	2	0
29	Sept	1	0	1	0	2	0
30	Sept	1	0	1	0	2	0
Total		30	0	30	0	60	0

(Signed) John Murray M. D.
Deputy Inspector General
of Hospitals Agra Circle.

No. 4.

Table of Daily Admissions
and Deaths from Cholera and
Dysentery amongst the 24. Mo
27th Regiment at Gwahlor
during the m. 18 0 0

Table of Admissions and Deaths from Cholera and Diarrhoea in the European Corps at Agra, Gwalior and Multra, and in the Native corps, Central Prison and Thomason Hospital at Agra, during the Year 1861.

Corps.	Disease	European Agra.						European Gwalior.						European Multra.				Native Agra.				Total European		Total Native		Grand Total				
		Artillery		H. Mis 62		H. Mis 107		Artillery		H. Mis 27		H. Mis 52		35 B		H. Mis 20		42 nd Regt		Central Prison		Thomason Hospital		European		Native		Total		
		Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	Admitted	Died	
June	Officers																													
	Men	Cholera																												
		Diarrhoea																												
	Women	Cholera																												
		Diarrhoea																												
	Children	Cholera																												
Diarrhoea																														
July	Officers																													
	Men	Cholera																												
		Diarrhoea																												
	Women	Cholera																												
		Diarrhoea																												
	Children	Cholera																												
Diarrhoea																														
August	Officers																													
	Men	Cholera																												
		Diarrhoea																												
	Women	Cholera																												
		Diarrhoea																												
	Children	Cholera																												
Diarrhoea																														
September	Officers																													
	Men	Cholera																												
		Diarrhoea																												
	Women	Cholera																												
		Diarrhoea																												
	Children	Cholera																												
Diarrhoea																														
Grand Total	Officers																													
	Men	Cholera																												
		Diarrhoea																												
	Women	Cholera																												
		Diarrhoea																												
	Children	Cholera																												
Diarrhoea																														
Strength	Officers	5	23	16	7	27	5	3	22	4	1	3	102	5	170															
	Men	106	669	396	203	955	266	106	245	565	2065	1500	2724	11730	7854															
	Women	15	33	33	25	80	16	5	27	94	1000	226	1094	1320																
	Children	20	30	44	27	157	20	6	31	570	357	500	857																	
Total of Strength		156	763	489	262	1213	303	120	319	569	2961	3003	3603	6532	10,105															
Ratio of Deaths to Admitted	Strength	Cholera	3.26	5.30	6.15	4.96	16.24	3.30	1.25	6.07	2.23	3.79	1.29	2.02	4.77															
		Diarrhoea	0.27	0.27			1.40	0.33		0.03	0.03	0.63	0.35	0.21	0.33															
	Admitted	Cholera	45.65	70.17	54.54	76.07	76.06	83.33	11.39	47.66	34.92	58.16	61.87	46.60	50.24															
		Diarrhoea		1.94			8.30	4.54		1.23	7.62	4.45	5.40	4.80																

Memo: There are 3 admissions from cholera. - The 42nd Highlanders on the 21st, 23rd and 29th June and 2 deaths on the 25th & 27th not sorted in Table 928.

(Signed) John Murray M. D.
Deputy Inspector General of Hospitals
Agra Circle.

Table of Observations
 of the Solar System
 during the year 1851

Longitude		Latitude		Time	Remarks
Observed	Computed	Observed	Computed		
177° 30'	177° 30'	0° 00'	0° 00'	10:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	11:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	12:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	13:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	14:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	15:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	16:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	17:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	18:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	19:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	20:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	21:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	22:00	Clear
177° 30'	177° 30'	0° 00'	0° 00'	23:00	Clear

Table of Admissions and Deaths from Cholera and Diarrhoea amongst the European Troops at the Station of Agra during 1867.

Corps.	Rank and Sex.	Strength.	Diseases.	Admitted.	Deaths.	Ratio P. C. deaths to.		Admitted from.			Date of.		Camp.			
						Strength.	Admission.	Barack.	Hospital.	Camp.	1 st base.	Last base.	Moved into.	Returned from.		
Artillery Division.	Officers	5	Cholera.	1	1	20.00	100.00	1	"	"	17 th July					
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"
	Men	106	Cholera.	0	3	2.73	47.50	0	"	"	17 th July	31 st July	"	"	"	"
			Diarrhoea.	12	"	"	"	12	"	"	"	21 st July	21 st Aug ^t	"	"	"
	Women	15	Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	"
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"
Children	20	Cholera.	2	1	3.57	50.00	2	"	"	3 rd Aug ^t	16 th Aug ^t	"	"	"	"	
		Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"
11 th M ^{ts} 62 nd Highlanders	Officers	23	Cholera.	1	1	4.35	100.00	1	"	"	27 th July	"	27 th July	13 th Aug ^t	"	"
			Diarrhoea.	2	"	"	"	2	"	"	17 th July	26 th July	"	"	"	"
	Men	649	Cholera.	53	39	6.01	73.50	27	14	12	25 th June	3 rd Aug ^t	"	"	"	"
			Diarrhoea.	92	1	0.15	1.09	80	"	12	6 th July	31 st Aug ^t	"	"	"	"
	Women	33	Cholera.	3	"	"	"	3	"	"	15 th July	27 th July	"	"	"	"
			Diarrhoea.	5	"	"	"	5	"	"	12 th July	25 th July	"	"	"	"
Children	30	Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	"	
		Diarrhoea.	4	1	2.63	25.00	4	"	"	10 th July	7 th Aug ^t	"	"	"	"	
24 th M ^{ts} 107 th Regiment.	Officers	16	Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	"
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"
	Men	396	Cholera.	40	24	6.06	50.00	39	4	5	7 th July	16 th Aug ^t	27 th July	10 th Aug ^t	"	"
			Diarrhoea.	62	"	"	"	59	"	3	2 nd July	12 th Aug ^t	"	"	"	"
	Women	33	Cholera.	4	3	9.09	75.00	4	"	"	2 nd July	31 st July	"	"	"	"
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"
Children	44	Cholera.	3	3	6.82	100.00	3	"	"	24 th July	26 th July	"	"	"	"	
		Diarrhoea.	7	"	"	"	7	"	"	15 th July	6 th Aug ^t	"	"	"	"	
Total.	Officers	44	Cholera.	2	2	4.54	100.00	2	"	"	19 th July	"	"	"	"	
			Diarrhoea.	2	"	"	"	2	"	"	17 th July	26 th July	"	"	"	"
	Men	1149	Cholera.	109	66	5.74	60.55	74	18	17	21 st July	16 th Aug ^t	"	"	"	"
			Diarrhoea.	166	1	5.00	0.60	157	"	15	2 nd July	31 st Aug ^t	"	"	"	"
	Women	81	Cholera.	7	3	3.70	42.85	7	"	"	15 th July	31 st July	"	"	"	"
			Diarrhoea.	5	"	"	"	5	"	"	15 th July	25 th July	"	"	"	"
Children	110	Cholera.	5	4	3.63	80.00	5	"	"	24 th July	6 th Aug ^t	"	"	"	"	
		Diarrhoea.	11	1	0.91	90.90	11	"	"	10 th July	7 th Aug ^t	"	"	"	"	
Grand Total.	1384	Cholera.	123	75	5.42	60.48	88	18	17	21 st June	16 th Aug ^t	"	"	"	"	
		Diarrhoea.	184	2	0.15	1.08	169	"	15	2 nd July	31 st Aug ^t	"	"	"	"	

(S^d) John Murray, M. D.
Deputy Inspector General
of Hospital Agra Circle.

Table of Admissions and Deaths from Cholera and Diarrhoea among the European Troops at the Station of Gwalior during 1861.

Corps.	Sex.	Strength.	Diseases.	Admitted.	Deaths.	Ratio P. C.		Admitted from.			Date of		Camp.	
						Strength.	Admission.	Barack.	Hospital.	Camp.	1 st Case.	Last Case.	Moved into.	Returned from.
Artillery Division.	Officers.	7	Cholera.	"	"	"	"	"	"	"	"	"	"	"
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"
	Men.	203	Cholera.	12	8	3.98	66.66	10	2	"	29 th July	20 th Aug ^t	"	"
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"
	Women.	25	Cholera.	1	1	3.88	100.00	"	1	"	10 th Aug ^t	10 th Aug ^t	"	"
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"
H. M. S. 2 nd Regt.	Officers.	21	Cholera.	2	2	9.52	100.00	2	"	"	9 th Sept ^r	16 th Sept ^r	"	"
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"
	Men.	554 485	Cholera.	207	148	16.74	75.84	100	18	81	25 th July	10 th Sept ^r	31 st July	"
			Diarrhoea.	166	9	0.94	5.42	109	"	57	22 nd July	25 th Sept ^r	"	"
	Women.	80	Cholera.	20	10	12.50	50.00	20	"	"	23 rd July	8 th Sept ^r	26 th Aug ^t	"
			Diarrhoea.	17	"	"	"	17	"	"	27 th July	6 th Sept ^r	5 th Sept ^r	"
Detachment of H. M. S. 52 nd Regiment.	Officers.	5	Cholera.	"	"	"	"	"	"	"	"	"	"	"
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"
	Men.	264	Cholera.	9	7	2.73	87.58	6	2	"	25 th July	22 nd Aug ^t	16 th	"
			Diarrhoea.	15	"	"	"	15	"	"	31 st July	26 th Aug ^t	"	"
	Women.	14	Cholera.	2	1	7.14	50.00	2	"	"	27 th July	28 th July	"	"
			Diarrhoea.	2	"	"	"	2	"	"	26 th July	16 th Aug ^t	"	"
Total.	Officers.	33	Cholera.	2	2	60.06	100.00	2	"	"	9 th Sept ^r	10 th Sept ^r	"	"
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"
	Men.	1351 1422	Cholera.	227	173	9.02	75.76	124	22	81	25 th July	11 th Sept ^r	"	"
			Diarrhoea.	181	9	0.63	5.11	124	"	57	22 nd July	25 th Sept ^r	"	"
	Women.	119	Cholera.	23	12	10.08	56.36	22	1	"	23 rd July	8 th Sept ^r	"	"
			Diarrhoea.	20	"	"	"	20	"	"	26 th July	6 th Sept ^r	"	"
Grand Total.		1678 1748	Cholera.	288	220	12.51	75.49	182	25	81	22 nd July	11 th Sept ^r	"	"
			Diarrhoea.	223	18	1.03	8.07	166	"	57	22 nd July	25 th Sept ^r	"	"

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1674
71.50

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12.53
72.92

(Sd.) John Murray M. D.
Deputy Inspector General
of Hospitals Agra Circle.

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John ...

Table of Admissions and Deaths from Cholera and Diarrhoea among the European Troops at the Station of Gwalior during 1861.

Corps.	Sex.	Strength.	Disease.	Admitted.	Deaths.	Ratio P. C. Deaths to		Admitted from			Date of		Camp.				
						Strength.	Admission.	Barack.	Hospital.	Camp.	1 st Case.	Last Case.	Moved into.	Returned from.			
Adj. Division.	Officers.	7	Cholera.	"	"	"	"	"	"	"	"	"	"	"	"		
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"		
	Men.	203	Cholera.	12	8	3.98	66.66	10	2	"	29 th July	27 th Aug ^t	"	"	"	"	
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"
	Women.	25	Cholera.	1	1	3.88	100.00	"	1	"	10 th Aug ^t	16 th Aug ^t	"	"	"	"	
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"
Children.	27	Cholera.	4	4	16.81	100.00	2	2	"	24 th July	26 th Aug ^t	"	"	"	"		
		Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"	"	
H. M. 2 nd Regt.	Officers.	21	Cholera.	2	2	9.52	100.00	2	"	"	9 th Sept ^r	16 th Sept ^r	"	"	"	"	
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"	
	Men.	584 953	Cholera.	207	148	16.74	78.86	100	10	81	25 th July	10 th Sept ^r	31 st July	"	"	148	
			Diarrhoea.	166	9	0.94	5.42	109	"	57	22 nd July	25 th Sept ^r	"	"	"	1674	
	Women.	80	Cholera.	20	10	12.50	50.00	20	"	"	23 rd July	8 th Sept ^r	26 th Aug ^t	"	"	"	
			Diarrhoea.	17	"	"	"	17	"	"	27 th July	6 th Sept ^r	3 rd Sept ^r	"	"	"	
	Children.	158	Cholera.	30	27	17.19	90.00	30	"	"	22 nd July	9 th Sept ^r	"	"	"	"	
			Diarrhoea.	17	8	3.82	52.54	17	"	"	22 nd July	6 th Sept ^r	"	"	"	"	
	Detachment of H. M. 52 nd Regiment.	Officers.	5	Cholera.	"	"	"	"	"	"	"	"	"	"	"	"	"
				Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"
Men.		264	Cholera.	8	7	2.73	87.50	6	2	"	25 th July	22 nd Aug ^t	9 th Aug ^t	"	"	"	
			Diarrhoea.	15	"	"	"	15	"	"	31 st July	26 th Aug ^t	"	"	"	"	
Women.		14	Cholera.	2	1	7.14	50.00	2	"	"	27 th July	28 th July	"	"	"	"	
			Diarrhoea.	2	"	"	"	2	"	"	26 th July	10 th Aug ^t	"	"	"	"	
Children.	20	Cholera.	2	2	10.00	100.00	2	"	"	3 rd Aug ^t	17 th Aug ^t	"	"	"	"		
		Diarrhoea.	5	1	5.00	20.00	5	"	"	25 th July	10 th Aug ^t	"	"	"	"		
Total.	Officers.	33	Cholera.	2	2	60.00	100.00	2	"	"	9 th Sept ^r	16 th Sept ^r	"	"	"	"	
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	"	"	
	Men.	1351 1622	Cholera.	227	173	9.02	75.76	124	22	81	25 th July	11 th Sept ^r	"	"	"	"	
			Diarrhoea.	181	9	0.63	5.11	124	"	57	22 nd July	25 th Sept ^r	"	"	"	"	
	Women.	119	Cholera.	23	12	10.00	56.36	22	1	"	23 rd July	8 th Sept ^r	"	"	"	"	
			Diarrhoea.	20	"	"	"	20	"	"	26 th July	6 th Sept ^r	"	"	"	"	
	Children.	175	Cholera.	36	33	18.96	91.66	36	2	"	22 nd July	9 th Sept ^r	"	"	"	"	
			Diarrhoea.	22	9	4.02	36.00	22	"	"	23 rd July	26 th Sept ^r	"	"	"	"	
	Grand Total.	1678 1748	Cholera.	288	220	12.51	72.59	182	25	81	22 nd July	11 th Sept ^r	"	"	"	210	
			Diarrhoea.	223	18	1.03	8.07	166	"	57	22 nd July	25 th Sept ^r	"	"	"	1253	

(Sd.) John Murray M. D.
Deputy Inspector General
of Hospitals, Agra Circle.

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7292

1871
 Report of the
 Survey of the
 Coast of
 the State of
 New York

Date	Time	Place	Wind	Direction	Force
1871	10	Long Beach	SE	1/2	1/2
1871	11	Long Beach	SE	1/2	1/2
1871	12	Long Beach	SE	1/2	1/2
1871	13	Long Beach	SE	1/2	1/2
1871	14	Long Beach	SE	1/2	1/2
1871	15	Long Beach	SE	1/2	1/2
1871	16	Long Beach	SE	1/2	1/2
1871	17	Long Beach	SE	1/2	1/2
1871	18	Long Beach	SE	1/2	1/2
1871	19	Long Beach	SE	1/2	1/2
1871	20	Long Beach	SE	1/2	1/2
1871	21	Long Beach	SE	1/2	1/2
1871	22	Long Beach	SE	1/2	1/2
1871	23	Long Beach	SE	1/2	1/2
1871	24	Long Beach	SE	1/2	1/2
1871	25	Long Beach	SE	1/2	1/2
1871	26	Long Beach	SE	1/2	1/2
1871	27	Long Beach	SE	1/2	1/2
1871	28	Long Beach	SE	1/2	1/2
1871	29	Long Beach	SE	1/2	1/2
1871	30	Long Beach	SE	1/2	1/2

Table of Admissions and Deaths from Cholera and Diarrhoea amongst the Native Troops at the Station of Agra, during 1861.

Corps.	Sex.	Strength	Disease.	Admitted.	Deaths.	Ratio P. C.		Admitted from			Date of		Camp.	
						Deaths to	Strength	Admission	Barrack.	Hospital.	Camp.	1 st Case.	Last Case.	Moved into
12 th Regiment N. I.	Officers	4	Cholera.	"	"	"	"	"	"	"	"	"	"	"
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"
	Men	565	Cholera.	12	5	0.80	41.66	12	"	"	18 th July	16 th Aug ^t	"	"
			Diarrhoea.	3	"	"	"	3	"	"	18 th July	2 nd Aug ^t	"	"
	Women	"	Cholera.	"	"	"	"	"	"	"	"	"	"	"
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"
Children	"	Cholera.	"	"	"	"	"	"	"	"	"	"	"	
		Diarrhoea.	"	"	"	"	"	"	"	"	"	"	"	
Sail.	Officers	1	Cholera.	"	"	"	"	"	"	"	"	"	"	
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	
	Men	2865	Cholera.	172	63	2.20	36.41	162	5	6	1 st July	18 th Aug ^t	11 th July	11 th July.
			Diarrhoea.	76	1	0.03	4.40	75	"	1	1 st July	30 th Aug ^t	28 th July.	12 th Aug ^t
	Women	94	Cholera.	16	3	3.19	10.75	16	"	"	6 th July	27 th July	"	"
			Diarrhoea.	5	"	"	"	5	"	"	12 th July	23 th Aug ^t	"	"
Total	2959	Cholera.	189	66	2.23	34.92	170	5	6	1 st July	18 th Aug ^t	289	Booyah.	
		Diarrhoea.	81	1	0.03	1.24	80	"	1	1 st July	30 th Aug ^t	289	Secundra.	
Thomason Hospital	Officers	3	Cholera.	"	"	"	"	"	"	"	"	"	"	
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	
	Men	1540	Cholera.	106	58	5.66	52.71	43	20	42	11 th June	18 th Aug ^t	"	"
			Diarrhoea.	63	4	0.26	6.25	27	"	36	9 th June	23 rd Aug ^t	"	"
	Women	1000	Cholera.	20	15	1.50	75.00	6	"	14	7 th June	26 th July	"	"
			Diarrhoea.	7	2	0.20	28.57	4	"	3	10 th June	13 th Aug ^t	"	"
Children	500	Cholera.	70	41	0.20	58.57	45	"	25	11 th June	19 th Aug ^t	"	"	
		Diarrhoea.	105	7	1.40	6.66	31	"	74	11 th June	30 th Aug ^t	"	"	
Total.	Officers	8	Cholera.	"	"	"	"	"	"	"	"	"	"	
			Diarrhoea.	"	"	"	"	"	"	"	"	"	"	
	Men	4930	Cholera.	291	126	2.57	43.64	277	25	49	11 th June	18 th Aug ^t	"	"
			Diarrhoea.	142	5	0.10	3.52	105	"	37	9 th June	30 th Aug ^t	"	"
	Women	1094	Cholera.	36	18	1.64	50.00	22	"	14	9 th June	13 th Aug ^t	"	"
			Diarrhoea.	12	2	0.18	17.66	9	"	3	10 th June	13 th Aug ^t	"	"
Children	300	Cholera.	70	41	0.80	55.57	35	"	35	11 th June	19 th Aug ^t	"	"	
		Diarrhoea.	105	7	14.50	6.66	31	"	74	11 th June	30 th Aug ^t	"	"	
Total.	6532	Cholera.	397	185	2.83	46.34	274	25	98	9 th June	19 th Aug ^t	"	"	
		Diarrhoea.	259	14	0.27	5.40	145	"	114	9 th June	30 th Aug ^t	"	"	
Grand Total.		6532	Cholera & Diarrhoea.	656	199	3.04	36.48	419	25	212	9 th June	30 th Aug ^t	"	"

(Signed) John Murray,
Deputy Inspector General of
Hospitals Agra Circle.

Statistical Table of admissions and deaths among the European Troops and Native Troops and Prisoners at Agra, Gwalior and Muttra. During the two attacks of Epidemic Cholera in the years 1860, and 1861. -

Agra 1st October 1861. -

Station	Year	Corps.	Strength.	Disease.	Admitted.	Died.	Ratio of Deaths to		Date of		
							Strength	Admission	First Case.	Last Case.	
Agra	1860	Artillery.	170	Cholera.	23	4	3.89	20.63	Aug ^t 16 th	Sept ^r 18 th	
				Diarrhoea.	114	-	-	-	Aug ^t 1 st	Sept ^r 7 th	
		H. M's 3 rd B. A. Coy.	1060	Cholera.	82	52	4.90	63.41	Aug ^t 9 th	Sept ^r 17 th	
				Diarrhoea.	694	-	-	-	Aug ^t 1 st	Sept ^r 29 th	
		Natives Central Prison.	1997	Cholera.	816	175	8.67	21.46	Aug ^t 10 th	Sept ^r 18 th	
				Diarrhoea.	203	3	0.15	1.42	Aug ^t 1 st	Sept ^r 31 st	
	Natives Agra Lys and Alice Saltern.	1419	Cholera.	47	18	1.26	38.30	Aug ^t 12 th	Sept ^r 31 st		
			Diarrhoea.	13	-	-	-	Aug ^t 6 th	Aug ^t 31 st		
	1861	Artillery	154	Cholera.	11	5	3.24	45.45	July 17 th	Aug ^t 6 th	
				Diarrhoea.	12	-	-	-	July 2 nd	Aug ^t 21 st	
		H. M's 42 nd Regt	743	Cholera.	57	40	5.58	70.17	July 16 th	Aug ^t 8 th	
				Diarrhoea.	103	2	0.27	1.44	July 1 st	Aug ^t 2 nd	
H. M's 107 th Regt		489	Cholera.	85	30	4.15	54.54	July 7 th	Aug ^t 16 th		
			Diarrhoea.	69	-	-	-	July 2 nd	Aug ^t 31 st		
Natives Central Prison.	2940	Cholera.	109	66	2.23	34.92	July 6 th	Aug ^t 11 th			
		Diarrhoea.	81	1	0.03	1.23	July 1 st	Aug ^t 30 th			
Natives 42 nd Regiment & 1 st Kompan Hospital.	3572	Cholera.	200	119	3.33	57.27	June 11 th	Aug ^t 11 th			
Diarrhoea.	171	13	0.36	7.30	June 9 th	Aug ^t 23 rd					
Gwalior	1860	Artillery.	164	Cholera.	20	14	0.53	70.00	Aug ^t 11 th	Sept ^r 16 th	
				Diarrhoea.	37	-	-	-	Aug ^t 3 rd	Sept ^r 16 th	
		H. M's 71 st Regt	775	Cholera.	139	71	4.16	51.07	July 21 st	Sept ^r 17 th	
	Diarrhoea.			222	3	0.38	1.35	July 25 th	Sept ^r 26 th		
	1861	Artillery	262	Cholera.	17	13	4.96	76.67	July 29 th	August 21 st	
				Diarrhoea.	-	-	-	-	-	-	
		H. M's 27 th Regt	4213	Cholera.	259	197	16.26	76.06	July 22 nd	Sept ^r 10 th	
	Diarrhoea.			200	17	1.40	8.58	July 22 nd	Sept ^r 13 th		
	Detacht. H. M's 52 nd Regt	303	Cholera.	12	10	3.30	83.33	July 25 th	Aug ^t 23 rd		
			Diarrhoea.	22	1	0.33	4.56	July 13 th	Aug ^t 1 st		
	Muttra.	1860	Artillery.	89	Cholera.	19	12	11.43	63.16	Aug ^t 13 th	Aug ^t 25 th
					Diarrhoea.	12	-	-	-	Aug ^t 9 th	Aug ^t 21 st
H. M's 2 nd Lt. B. Coy.			270	Cholera.	31	12	4.38	38.71	Aug ^t 11 th	Sept ^r 12 th	
		Diarrhoea.		12	-	-	-	Aug ^t 12 th	Sept ^r 22 nd		
1861		Artillery	120	Cholera.	-	-	-	-	July 5 th	August 27 th	
				Diarrhoea.	17	-	-	-	-	-	
	H. M's 20 th Lt. Coy.	319	Cholera.	23	4	1.25	17.39	July 16 th	Aug ^t 7 th		
Diarrhoea.			26	-	-	-	July 10 th	Aug ^t 10 th			
Total	1860	Europeans	2545	Cholera.	327	168	6.68	51.37	July 22 nd	Sept ^r 17 th	
		Diarrhoea.	1013	3	0.17	0.29	July 25 th	Sept ^r 29 th			
Natives	3416	Cholera.	862	193	5.65	22.36	Aug ^t 10 th	Sept ^r 11 th			
		Diarrhoea.	276	3	0.07	1.39	Aug ^t 1 st	Sept ^r 30 th			
Total	1861	Europeans	3603	Cholera.	434	299	8.29	60.87	July 7 th	Sept ^r 15 th	
		Diarrhoea.	449	20	0.55	4.45	July 1 st	Sept ^r 13 th			
Natives	6532	Cholera.	397	185	2.92	46.60	June 11 th	Aug ^t 31 st			
		Diarrhoea.	259	14	0.27	5.40	June 9 th	Aug ^t 31 st			
Total	Europeans	6140	Cholera.	761	467	7.59	61.35	July 7 th	Sept ^r 17 th		
			Diarrhoea.	1478	23	0.37	1.56	July 1 st	Sept ^r 29 th		
Total	Natives	9948	Cholera.	1259	378	3.77	29.70	June 11 th	Sept ^r 11 th		
			Diarrhoea.	475	17	0.17	3.58	June 9 th	Sept ^r 31 st		
Grand Total Europeans and Natives for 1860, 1861.			16096	Cholera.	2020	845	5.25	41.83	June 11 th	Sept ^r 17 th	
				Diarrhoea.	2950	40	0.24	2.05	June 9 th	Sept ^r 29 th	

(Signed) John Murray M. D.
Deputy Inspector General

Comparative Table of Admissions and Deaths from Cholera and Diarrhoea in the European and Native Troops and Prisoners at Agra in the Years 1837-38-39-40-41-42-43-44-45-46-47-48-49-50-51-52-53-54-55-56-57-58-59-60-61-.

Agra 1st November 1861.

Year.	Corps.	Strength.	Diseases.	Admitted.	Died.	Date of		Ratio Per cent Deaths to.	
						First case.	Last case.	Strength.	Admissions.
1837.	Artillery -	200	Cholera	7	5	October.	November.	2.44	77.43
			Diarrhoea.	32	0				
	European Regiment.	767	Cholera	4	2	October.	November.	0.26	52.00
			Diarrhoea.	7	1			0.13	16.28
1838.	Artillery Native	3092	Cholera	10	2	October.	November.	0.37	20.00
	1/2 Native corps.		Diarrhoea.	62	1			0.03	2.38
	Sail.		Cholera	-	-				
1839.	Artillery.	196	Cholera.	1	1	July.	July.	0.00	0.00
			Diarrhoea.	4	0				
	European Regiment	607	Cholera.	9	5	March.	May.	0.74	55.55
			Diarrhoea.	27	0				
1840.	1/2 Native corps.	3099	Cholera	104	62	March.	July.	1.35	63.61
			Diarrhoea.	224	3			0.09	1.29
	Sail.	1310	Cholera.	125	71	March.	July.	5.38	58.80
1841.			Diarrhoea.	399	127			9.35	37.83
	Artillery.	173	Cholera	11	5	Augt.	September.	2.89	45.45
			Diarrhoea.	1	-				
	H. M's 39 th Regiment	1003	Cholera	129	49	Augt.	September.	4.88	38.00
1842.			Diarrhoea.	32	-				
	1/2 N. I. Regiment.	2942	Cholera	13	6	August.	August.	0.20	46.15
			Diarrhoea.	-	-				
1843.	Sail.	1047	Cholera	61	28	August.	September.	2.67	45.90
			Diarrhoea.	50	2			0.19	4.00
1844.	Artillery.	95	Cholera	1	1	24 th Augt.	26 th Augt.	1.05	100.00
			Diarrhoea.	-	-				
	2 nd European Regt	1048	Cholera	27	6	10 th August.	7 th September.	0.57	22.22
			Diarrhoea.	9	0				
1845.	3 Corps N. I.	3048	Cholera	2	1	8 th August.	8 th August.	0.03	50.00
			Diarrhoea.	10	0				
1846.	Central Prison.	2939	Cholera	264	80	25 th July.	30 th August.	2.72	30.30
			Diarrhoea.	54	-				
1847.	Artillery.	95	Cholera	24	16	22 nd June.	7 th July.	16.73	58.73
			Diarrhoea.	6	-				
	3 rd European Regiment	920	Cholera	289	81	10 th June.	9 th July.	7.10	28.00
			Diarrhoea.	32	-				
1848.	3 Corps N. Inf.	2942	Cholera	70	34	6 th June.	15 th July.	0.92	65.33
			Diarrhoea.	24	-				
1849.	Central Prison.	3704	Cholera	564	229	30 th May.	19 th July.	6.45	42.35
			Diarrhoea.	160	-				
1850.	8 th Artillery.	174	Cholera	24	7	16 th August.	22 nd September.	4.00	29.16
			Diarrhoea.	48	-				
	3 rd Bat ^l Rifle Brigade.	1047	Cholera	86	52	9 th August.	30 th September.	4.91	60.46
			Diarrhoea.	1720	0				
1851.	Police Batt ⁿ N. I.	1619	Cholera	47	18	12 th August.	30 th September.	1.26	38.30
			Diarrhoea.	13	0				
1852.	Central Prison.	1991	Cholera	816	175	10 th August.	30 th September.	8.76	27.44
			Diarrhoea.	203	0				
1853.	Artillery.	111	Cholera	9	4	17 th July.	31 st July.	3.63	44.44
			Diarrhoea.	15	0				
	H. M's 42 nd Highland ^r	672	Cholera	52	40	21 st June.	8 th August.	5.95	74.07
			Diarrhoea.	77	2			0.30	2.60
1854.	H. M's 107 th Regiment	412	Cholera	48	24	7 th July.	16 th August.	5.82	58.00
			Diarrhoea.	89	-				
1855.	42 nd Regiment N. I.	569	Cholera	12	5	10 th July.	11 th August.	0.87	47.66
			Diarrhoea.	3	-				
1856.	Central Prison.	2959	Cholera	189	66	1 st July.	10 th August.	2.33	34.92
			Diarrhoea.	81	1			0.03	1.23
1857.	Thomson Hospital	3000	Cholera	197	115	9 th June.	25 th August.	3.50	58.37
			Diarrhoea.	175	12			0.40	6.16

(Signed) John Murray, M. D.
Deputy Inspector General of Hospitals, Agra.

Comptroller General
Treasury and Finance
Washington, D.C.

1000	General Fund
1100	Special Fund
1200	Capital Fund
1300	Trust Fund
1400	Reserve Fund
1500	Contingent Fund
1600	Unassigned Fund
1700	Other Fund
1800	...
1900	...
2000	...

APPENDIX.

COPY OF CAPTAIN WALTER'S REPORT ON THE ORIGIN AND COURSE OF CHOLERA IN THE BHURTPORE TERRITORY IN 1861.

The Tehsildar of Gopalghur reports, that Cholera first broke out at the village of Kythwara, at the end of April. Kythwara is distant from Gopalghur eight miles, and from Bhurtpore about forty miles. After eight or nine days, the Cholera reached Gopalghur itself, and continued there with great violence for twenty or twenty-five days. It then went off to the villages towards the west Andwarie, Bunenie and others, two or three days afterwards it suddenly attacked the villages of Seekree, and others in the neighbourhood, and finally, spread all over the Purgunnah. The wind during the time the Cholera raged at Gopalghur, was generally from the East, sometimes from the North, and occasionally from the South. When Cholera first broke out at Kythwara, it had not been heard of any where else in the neighbourhood. It went on from Gopalghur to Paharie, and then in a Westerly direction towards Ferozepore and the Ulwar District.

The following Table shows the date of appearance, the duration and mortality from Cholera in the various towns on the Bhurtpore territory. The data are supplied by the Tehsildars of the towns and they may be relied on.

Table of deaths from Cholera in the different cities in the Bhurtpore territory during the Epidemic attack in the year 1861.

	Population.	Men.	Women.	Boys.	Girls.	Total.	1st Case.	Last Case.	REMARKS.
Gopalghur P.,	49,131	326	154	160	139	779	26th Apl.	26th June.	1
Puharie, ...	26,000	93	62	37	23	215	4th May.	Do. Do.	2
Rama,	34 000	111	47	61	50	269	5th Do.	Do. Do.	3
Bunsawr,		68	33	53	22	176	10th Do.	30th Do.	4
Deig,		65	13	21	15	144	15th Do.	26th Do.	5
Oachein,		20	14	12	16	62	15th Do.	June.	6
Byana,		55	35	36	28	148	15th Do.	Do.	7
Wier,		10	3	3	5	21	28th Do.	25th July.	8
Bhurtpore city,	57,000	106	71	57	42	276	5th June.	25th Augt.	9
Do. District,		28	7	17	12	64	5th Do.	Do.	10
Nugger,		41	23	25	14	103	6th Do.	25th July.	11
Kombher,		39	26	29	19	113	6th Do.	26th Do.	12
Roopkbas,		2	1	1	1	5	6th Do.	30th Do.	13

(Sd.) C. A. N. WALTER,
Officiating Political Agent,
Bhurtpore.

Bhurtpore, 18th October, 1861.

