

MADRAS RECORD OFFICE.

Government of Madras.

DEPARTMENT.

G.O. No.	Press Mis.
Dated	19 .

Not to be folded or roughly handled

Proceedings of the Madras Government, Public Department,
10th March 1869.

No. 59. Read the following letter from the Inspector General, Indian Medical Department, to the Secretary to Government, Military Department, Fort Saint George; dated Fort Saint George, 4th February 1869, No. 45.

I have the honor, with reference to the Proceedings of Government as per margin, to forward herewith, for transmission to the Government of India, reports from various Medical Officers who have had practical experience in the treatment of cholera.

2. These reports, I regret to say, throw no new light on the subject to which they relate. The experience of the medical profession in Europe during the recent epidemic is, I believe, identical with that of medical men in India, that no plan of treatment yet tried is productive of wholly satisfactory results.

3. While the proportion of deaths to attacks of cholera appears to be steadily increasing in India and in all other countries, it is much to be regretted that the actual value of any plan of medical treatment in this dreadful malady has not been determined by careful experiment.

4. Medical Officers in India are seldom favorably circumstanced to examine thoroughly this question of medical treatment. During the presence of epidemics, they are, for the most part, overworked; and being subjected to great mental and bodily fatigue on these trying occasions, and too much harassed with cares and anxieties, they are unable to watch and record, with the care that is necessary, the precise effects of remedial agents.

5. There seems to be a tolerable amount of unanimity amongst Medical Officers as regards the value of certain medicines in checking the premonitory diarrhoea of cholera; but, as regards the more serious form of the disease, the variety of remedies suggested would seem to show how little dependence the suggestors themselves place in them. In truth, nothing is definitely known in regard to the value of medicines in cases of confirmed cholera.

6. Under these circumstances, and considering especially how many years we have been familiar with the disease, and powerless to cure it, a proposition for the establishment of Cholera hospitals, supervised by a specially selected staff of Medical Officers and attendants might, I suggest, be made to the Government of India. One of the main objects of the establishment of such hospitals, (apart from the important question of segregating persons smitten by cholera,) would be, the experimental trial of old and new methods of treatment under circumstances favorable to the scientific investigation and record of all the phenomena of the disease.

7. I may mention that quite within recent times new modes of administering remedies have become comparatively common; such, for instance, as the injection of medicines beneath the skin, or of certain solutions into the veins. Considering that in cholera all the digestive and assimilative functions of the body are, more or less, in abeyance, and that medicines put into the stomach are but seldom taken into the general circulation, it is not improbable that, if an effective mode of treating cholera is ever discovered, it will be by the introduction of remedial agents into the

body by these new modes of procedure, rather than by the common mode of administration by the mouth.

8. These are points certainly deserving of most careful investigation, and, provided we had well-organized Cholera hospitals, various plans of treatment might be devised, experimented on, and recorded for the benefit of future investigators. I fear that the ordinary medical staff of a regiment or civil station during an epidemic will never have the time and means at their disposal of carrying out the systematic investigation of a subject so difficult and hard to unravel as the treatment of cholera.

REPORTS.

Surgeon W. N. CHIPPERFIELD, General Hospital, Madras.

For Diarrhœa during cholera epidemics.—In cases of serous diarrhœa, *R. Acidi sulphurici dil. m. xl—lx., Tinct. opii. m. v—x., Aqua menthæ pip. ℥ij. : mix., to be given every hour ; or R. Plumbi acetatis grs. iij—iv., Acidi acetici dil m. xx., Tinct. opii. m. x., Aqua camphoræ ℥iss., mix ; to be given every two hours.*

General treatment without mentioning stages.—On admission, in whatever stage, the following emetic is given: *R. Sodii chloridi ℥ij., Liquoris sodæ chloratæ ℥ss., Aqua font ℥iv. : mix ;* if it does not act freely within quarter of an hour, it is repeated. After the action of the emetic, an eighth part of the following mixture is exhibited every quarter or half hour, according to severity of attack, &c. *R. Sodii chloridi ℥i., Soda carbonatis grs. xxx., Potassæ bicarbonatis grs. xx., Potassæ chloratis grs. xxx., Soda phosphatis grs. xx., Liquor sodæ chloratæ m. xxx., Aqua font ℥iv. : mix ;* the patient is freely supplied with mutton or chicken broth, or beef-tea. Liebig's Ext. Carnis is preferred, with some arrowroot or sago thickening. Each dose of the medicine may be given in broth. In profound prostration, every alternate or every third dose of medicine is substituted by two or three drachms only of brandy, diluted with an ounce of hot water, and sweetened. After three or four hours, the interval between the doses of medicine is lengthened ; and, as symptoms subside, the salines are omitted. Bottles and tins of hot water and frictions with turpentine are used for the relief of cramps.

Obstinate vomiting.—Should vomiting persist after the operation of the emetic, the effervescing Citrate of Ammonia is given, or mixture *R. Creasoti m. iv.—vi., Sp. chloroformi ℥ij., Acid hydrocyanici dil. m. xx., Syrupi ℥ij., Mixt. acacia ℥ss., Aqua font ℥ij., mix.* A fourth part every hour or so, at the same time warm beef-tea enemata are given, as Beef-tea ℥viii., Brandy ℥ss., Liq. sodæ chloratæ ℥i.

Suppression of urine.—Sinapisms, hot fomentations, turpentine stupes, hot linseed poultices, or dry cupping to the loins are useful, or four or five ounces of blood taken by the scarificator.

Secondary fever and uræmic symptoms.—Secondary fever is unusual in India. Uræmic somnolence and coma are common from continued suppression of urine or the recurrence of the suppression some days after the secretion has been restored. In the latter case, the bowels are almost always constipated. If there be injection of the conjunctiva with somnolence, a cantharadine blister, or better, the Liquor Vesicatoria is applied to the nape of the neck, and hot epithems to the loins. If the bowels are constipated, the following is given: *R. Rhei rad. cont. grs. x., Jalapæ rad. cont. grs. x., Potassæ chloratis grs. vi., Aqua cinnamomi ℥ij. ;* and should it not act quickly, an enema is given of a pint or more of warm water with half an ounce of soap liniment and two or three drachms of Tinct. assafoetidæ. Afterwards draughts of Chlorate of Potash with Spirits of Nitrous Ether are given, and, in suitable cases, quinine dissolved in dil. Hydrochloric acid is added.

Surgeon E. D. EVEZARD, 3rd Regiment P. L. I., Madras.

For Diarrhœa during cholera epidemics.—In cases of simple diarrhœa or relaxed bowels, when cholera is prevalent, with the usual remedies for diarrhœa is combined a mild opiate with some stimulant, about half a tumbler of warm brandy and water with some spice, followed at intervals of a quarter of an hour or so by two tea-spoonsful of brandy in a suitable quantity of water.

1st stage.—Into half a tumbler of pure water drop a drachm of the red solution of Permanganate of Potash, eight grains to the ounce (Condy's Fluid), and make the patient drink it before it has time to mix, repeating the draught every half hour if necessary. The first or second dose, however, generally stops the vomiting and alters the character of the excreta ; the patient may then be treated as circumstances require. If both purging and vomiting have ceased and the pulse be good, he may be left alone, beyond careful feeding and supporting till the next morning, when, if he has passed a non-bilious stool and is otherwise out of tone, a grain of calomel with two grains of quinine may be administered and repeated three times during the day.

2nd stage.—When a patient is admitted under the following circumstances : vomiting and purging every few minutes, perhaps involuntarily, the too well-known rice-water fluid with the peculiar smell, his eyes sunken, voice husky, skin cold and clammy, and pulse at the wrist scarcely, if at all perceptible, with or without cramps, and probably not secreted any urine for some hours, Condy's Fluid as directed before, alternating it with some powerful stimulant like the following, is given. *R. Tinct. lavandulæ comp. ℥iss., Ætheris sulph. ℥i., Chloroform ℥i. (or Chloric æther ℥iss), Ol. menthæ pip. ℥ss. mix well. : Dose 15 to 20 drops in half an ounce or so of water every half hour, or hour, according to circumstances.* Sometimes small doses of morphia are added, particularly when the patients are opium-eaters ; but this remedy requires, of course, particular caution in its administration at this stage, small and frequently repeated quantities of broth, or, if the patient be of high caste, milk is also administered, taking care that all the water used both for cooking and for drink is previously disinfected by the requisite quantity of Condy's Fluid. For the cramps, champooing and gentle friction with turpentine answer best, also a hot turpentine stupe over the abdomen and frequent mustard plaisters to the cardiac region. When the vomiting persists after purging has ceased, dilute Hydrocyanic acid in four-drop doses is administered. Small quantities of ice are also given, and handling about of the patient is prohibited. During convalescence, great caution is used in administering food, which should be given in very small frequently, repeated quantities, and, if necessary, iced.

3rd stage.—Disinfecting fluid as an enema, liquid blister over cardiac region and to nape of neck, and mustard poultices to soles of feet, &c., with frictions. Medicines and food by the mouth as described above are administered. In only one case of serous discharge which came under notice after recovery from collapse, the administration of Condy's Fluid, injections of Gallic acid, brandy, broth, and milk for three weeks, were insisted on, and the patient recovered. Dry cupping to assist in the secretion of urine when it has stopped.

Surgeon G. W. WALTER, 3rd District, Madras.

Treatment pursued during the march of his regiment from Madras to Secunderabad in January, February, and March.

For Diarrhœa during cholera epidemics, 3rd stage.—All the cases were spasmodic cholera ; all had suppression of urine, and most of them, 19 out of 20, reached the stage of collapse before treatment had commenced. The plan of treatment was a combination of that of Eyre and Stevens. Every man on admission had a ℥ij. dose of common salt, which usually acted on both stomach and bowels. In half an hour he had given him a pill containing one grain each of calomel and opium ; this was repeated every half hour up to two or sometimes three doses, never more.

He then took one grain of calomel every hour, or, if very bad, every half or even quarter of an hour, with ℥j. of Stevens' saline mixture every hour, the intervals between the doses of medicine being increased as amendment takes place. Turpentine frictions were used to the cramped limbs, and a heated plaister spatula was applied short of blistering along the course of the spine, strong broth being given throughout the attack; but stimulants were generally withheld.

Surgeon E. E. LLOYD, *Nellore.*

For Diarrhœa during cholera epidemics, 1st stage.—Inclined to place much confidence in Patterson's pills when the case is seen sufficiently early.

Assistant Surgeon J. HENDERSON, *Bangalore.*

And during march from Kamptee to Secunderabad with 33rd Regiment M. N. I. in 1860.

For Diarrhœa during cholera epidemics, 1st stage.—1st.—Calomel and opium in regulated doses as alterative and sedative. 2nd.—Scott's Tincture ℥j. every 30 or 40 minutes as a topical tonic and diffusible stimulant. 3rd.—Brandy with soda water or water as gentle, general support, and refreshing drink. The alcohol *not* as a stimulant, but as food. Sinapisms to abdomen over the solar plexus, frictions, and, if possible, locomotion.

2nd stage.—Small quantities of tea, æther, ammonia, camphor or brandy, or Scott's Tincture.

Frictions.—Applications of heat, or blister to spine, or head, enemata of turpentine or strong tea. Electricity, care in respect to over-interference; after treatment, speedy change of air and scene, and passive movement.

General treatment without mentioning stages.—Fresh air, and moderate supply of cold water and attentive nursing. For particular symptoms as vomiting, purging, suppression of urine, cramps, &c., &c., &c., endeavours to procure their subsidence, and restoration of normal function by interfering with, or offering some obstacle to, the disease or abnormal state of body, whatever it may be, are made.

Surgeon Major J. KIRKPATRICK, M.D., *Bangalore.*

For Diarrhœa during cholera epidemics, 1st stage.—In the premonitory stage preceding discharges, a stimulant of brandy or wine and water, or of spirits of ammonia and chloroform or æther will be generally useful; and for symptoms of indigestion or overloaded stomach, a mustard emetic, and, in earlier period of discharges, aromatics with vegetable astringents and small doses of calomel with camphor and opium should be given.

2nd stage.—If discharges persist, evacuations become watery and symptoms of collapse are supervening, calomel in one or two pretty large doses, with camphor and opium in moderate quantities, followed by smaller doses of the same, is much to be relied on; or, instead of the calomel and opium plan, recourse may be had to mineral astringents as sulphuric acid with quinine, camphor, and opium.

3rd stage.—When collapse is fully established, opiates should be discontinued; and the losses the system has sustained should be replaced by suitable food and drink; and circulation of the blood aided by posture and frictions. Vinous stimulants, if desired by the patient, are useful; if not desired injurious, drinks may be given as frequently as asked for, but not in large quantities. Solid food should not be given, and during collapse necessity of the horizontal posture is absolute.

General treatment without mentioning stages.—In the stage of reaction, rubifacients or epispastics are useful. Fever of reaction is treated with diaphoretic saline mixtures combined with calmatives, as hyosciamus in an emollient vehicle. For purgatives, olive, sesamum, or castor oil in small doses. Further remark rest in bed. Drinks should be given pretty freely and frequently, and those slightly acidulated with vegetable acids are the best. Fluid animal food as milk, butter-milk, or soup. Astringents, the compound aromatic powder of chalk and opium, or mixture creta with tinctures of catechu or kin. and laudanum may be sufficient in early stages of diarrhœa or chlorodyne and its of imitations. During rice-water evacuations, either acetate of lead with opium, &c., as in Patterson's pills, or preferably dilute sulphuric acid with aromatics, quinine, and opium, as in Scott, Thompson, and Co.'s Cholera Tincture are reliable; or calomel with camphor and opium in large doses at first, and then in smaller doses as before said in powder in sugar. Ammonia during collapse, strong coffee or tea without milk or sugar.

Assistant Surgeon J. DOUGALL, *Cuddapah.*

For Diarrhœa during cholera epidemics, 1st stage.—℞. Tinct. opii. m. xx., Spiritus chloroform ℥j., i. e., 15 parts of alcohol to one of chloroform, Tinct. catechu ℥j., Mist. Creta ℥j: mft. mixt., to be given every hour while purging continues. If medicine is not retained, Acid hydrocyan. dil. m. v. is added to the above mixt., and hot turpentine stupes are applied over the stomach.

3rd stage.—On collapse setting in, the former is discontinued and the patient kept still, while blankets wrung out of hot water are wrapped round and often changed. He is wiped all over, and slight friction with flannel to excite reaction is used. For cramps, shampooing, and when pulse lowers, brandy and ammonia are given, but champagne is better. Hot fomentations good.

General treatment without mentioning stages.—During stage of reaction, simple arrow-root conjee with an ounce of portwine every three hours during first day of this stage. For suppression of urine, small doses of spirits of æther nitrici were given; and when biliary secretions have not been re-established, small doses of blue pill were given. In cases where violent reaction is followed by indications of inflammatory complications, they must be treated on general principles.

Surgeon J. HOUSTON, M. D., *Bangalore and Mysore.*

For Diarrhœa during cholera epidemics, 1st stage.—Before evacuations have become choleraic, the combination of a stimulant with an opiate, and, in some cases, with an astringent, is often productive of benefit. Half a glass of brandy with 15 to 30 minims of laudanum is a good form. It may be repeated if necessary, and 20 minims of tincture of catechu added. Chlorodyne in repeated doses is of great efficacy. If stomach is loaded, a stimulating emetic, as sulphate of zinc or mustard. Good diet and rest.

2nd stage.—Astringents combined with small doses of opium during rice-water evacuations. The acetate of lead, and opium pill of the Edinburgh Pharmacopœia and Patterson's pills, are useful. They should be repeated every quarter or half hour, till three or four doses have been taken, or till purging cease. Iced water to allay thirst. Friction with the hand or with stimulating liniment for cramps. Beef-tea, pepper-water or conjee, and a stimulant as brandy, may be given.

3rd stage.—Stimulating diet and stimulants may be given, but the stomach must not be loaded. Frictions to the body and external warmth.

General treatment without mentioning stages.—On recovery from collapse, the management must be on general principles, and symptoms treated as they arise. Caution in diet and in the use of laxatives.

Assistant Surgeon W. FARQUHAR, Ootacamund and Bangalore.

For Diarrhœa during cholera epidemics, 1st stage.—Apply round the abdomen a flannel roller, wrung dry out of hot water, and well sprinkled with oil of turpentine. Warmth to surface by a blanket, frictions in an upward direction to the extremities. If uncomfortable, they may be discontinued. During choleraic purging and vomiting, and especially after a meal, give two table-spoonsful of mustard in a tumbler of cold water. Infusion of black pepper may be substituted. Iced water or creasote water (m. iij. to a pint) *ad libitum*. Arrowroot congee, chicken broth, or beef tea to be sipped at every favorable opportunity; if not retained by stomach, they may be given by enema: also medicines the same way. Wet towel to chest for tightness of breathing. In 20 or 30 minutes after emetic, if vomiting or purging or both continue, and the patient passing into collapse, give two dessert-spoonsful of the following mixture (or ℥j.) every hour or half hour: R. Chloroformi m. xlv., Sodæ sesquicarb ℥ss., Spts. Ammon. comp. ℥ss. ℥ij., Tinct. zingiberis ℥ss., Ol. menthæ et Anisi. ad m. x. Aqua ℥viiss. m. ft., Tinct. opii. m. x. to be added to the first two or three doses, if purging be a chief feature and if opium has not already been taken. If vomiting predominate, Creasote m. ii. or dilute Hydrocyanic acid m. iij. may be given with each dose, the latter only for two or three doses. For severe cramps, add to each dose of the mixture five drops more of chloroform. For cramps, bromide of potassium is good. If cramps continue and if they chiefly affect the legs, a ligature below the knee, or the legs drawn out and suddenly flexed is good.

3rd stage.—A 10-grain dose of calomel, or 1 or 2 grains washed down by Sp. ammon. comp. in water every 10 to 20 minutes. In malarious districts or seasons, or in patients with that taint, quinine in 2 or 5-grain doses, till 15 or 20 grains are taken, may be put on the tongue with calomel. If no narcotic up till now has been taken, Tinct. cannabis indica m. v. to a European, and Tinct. opii. m. v. to x. to a native, to be given with each dose; but the total amount not to exceed 30 to 50 minims. Artificial respiration, metal spoon dipped in boiling water may be applied under left nipple and along the spine to rouse the heart and nervous system. For suppression of urine, dry cupping followed by the abstraction of 2 or 3 ounces of blood from the loins by leeches or by cupping may be resorted to. Acetate or chlorate of potash in free doses, largely diluted, should be administered.

General treatment without mentioning stages.—State of reaction or secondary fever. A moderate calomel purge, cold to the head, cold sponging of surface. If necessary, leeches to temples, small doses of calomel and James' powder. A continuation of remedies to solicit the flow of urine. A blister to nape when coma threatens or is present. Convalescence during this stage, carefulness in diet. Artificial respiration by Sylvester's method may be of much utility in collapse, and water containing nutriment introduced in every possible way into the system.

Surgeon J. P. NASH, Mercara, 15th Regiment N. I.

General treatment without mentioning stages.—8 grains of calomel and of camphor, with 10 of bicarbonate of soda. This powder is repeated in half an hour or an hour, according to the urgency of the symptoms; and a large mustard plaister is applied over the liver, stomach, and spleen. Should the vomiting and purging with cramps in the extremities still continue, a draught composed of 5 minims of chloroform, 15 minims of laudanum, 1 drachm of spirit of nitrous æther, $\frac{1}{2}$ a drachm of tincture of ginger and of tincture of capsicum, with 2 ounces of camphor water, is given every two hours. The patient is allowed to quench his thirst with effervescing draughts, and his strength is supported with chicken broth.

Surgeon Major H. SMITH, Cannanore.

For Diarrhœa during cholera epidemics, 1st stage.—A full dose of castor oil, or rhubarb and carbonate of soda combined, with a moderate quantity of tincture of opium, the latter as a stimulant, say ten drops, followed by a carminative mixture, ginger brandy, &c., flavoured with cinnamon or peppermint. In languor and debility, sulphate of quinine in full doses (5 grains) combined with chloric æther. Diet of strong soup or broth (a little at a time) with a liberal quantity of brandy and wine.

2nd stage.—Surface of the body to be kept dry, occasionally sponging it with hot water followed by friction with dry warm towels, sinapisms to epigastrium and inside of thighs, the maintenance of a high temperature by means of hot stones or bricks or bottles filled with hot water and the exhibition of stimulants in moderate quantity to increase thirst, which ought to be assuaged by a liberal supply of cold water, a little at a time.

3rd stage.—A trace of pulsation at the wrist, a dryer if not a warmer skin, a wish or want whispered in a more distinct tone, aloud, the passage of even the smallest quantity of urine, under the above circumstances, stimulants of kinds, chiefly, champagne and brandy, beef-tea and jugged chicken broth, conjees of kinds. Supposing satisfactory progress on the second day, from $\frac{1}{2}$ an ounce to 6 drachms of castor oil may be prescribed with or without the tincture of opium. Foot and hip baths will be found useful in congestions of the brain, lungs, &c., diaphoretics and if the kidneys be doing their duty, diuretics are advisable. Leeches may be applied with due regard to the state of the pulse; but should the urine be deficient in quantity, diuretics would be highly injurious. Cupping glasses to the loins, and, if necessary, the scarificator, the bleeding being encouraged to the extent of a few ounces by fomentation would be useful.

Surgeon E. S. CLEVELAND, French Rocks, Mysore, 21st Regiment N. I.

For Diarrhœa during cholera epidemics, 1st stage.—Astringents comprising mixtures of chalk and opium or catechu of tannic or gallic acid with compound tincture of camphor, pills of acetate of lead, camphor, calomel, and opium, powders of chalk and opium, of aromatic powder and dried carbonate of soda.

2nd stage.—Stage of depression with non-biliary evacuations treated with stimulants and calomel, comprising mixtures of capsicum, camphor, and cascarrillæ, and with copious hot draughts of barley-water or rice congee-water with table salt: a first scruple dose of calomel with subsequent two grain doses of same every half hour.

3rd stage.—Stage of collapse treated with stimulants, friction, leeching and dry cupping in the following order: Mixtures of carbonate of ammonia and compound decoction of bark, of brandy and tincture of capsicum. Vigorous friction of extremities with heated bags of sand. Leeches and fomentations to the lumbar region to relieve renal congestion, and dry cupping to the præcordia. When the above is successful, a subsequent course of tonics and alteratives and support is adopted.

Surgeon L. W. STEWART, Bellary, 2nd Regiment L. C.

General treatment without mentioning stages.—In sporadic and mild cases of the disease, stimulants, and astringents (brandy, ammonia, and catechu,) answer very well. In severe cases, *i. e.*, where the skin has become cold, pulse almost imperceptible, voice low and husky, and no secretion of urine for five or six hours, I have found a table-spoonful of Europe mustard with ℥j. of ipecacuanha act most satisfactorily, and even in cases of strictly collapse, I recommend as I have prescribed, gr. ij. ad gr. iv. of tartar emetic with from ℥ij. ad ℥j. of Europe mustard. After the stomach has been evacuated by emesis, ℥j. doses of sulphuric acid diluted and ℥ss.

of nitric acid diluted with either decoction of chinchona or water, or else the sulphuric acid diluted with nitric æther. Two doses of this strength will suffice, when smaller doses are prescribed, and small quantities of beef-tea or mutton broth thickened with arrowroot.

Surgeon R. ARNOLD, Bellary, 20th Regiment N. I.

General treatment without mentioning stages.—Astringents with opium, rest in recumbent position, farinaceous food, and alcoholic stimulant in small quantities. If tendency to bilious vomiting exists, calomel in x.-grain doses combined with opium, and repeated after two hours if necessary. Diluents and iced water may be allowed. As the disease advances, mineral acids, especially sulphuric, in x.-minim doses frequently. Champagne in small quantities at a time when the disease is fully developed, or even earlier. Turpentine in xx.-minim doses, in the form of emulsion, given every half hour. For cramps, friction by turpentine stupes, hot fomentations, &c. Reaction, diaphoretics with sedatives are useful.

Surgeon A. H. BEAMAN, 39th Regiment N. I., Bangalore.

For Diarrhœa during cholera epidemics, 1st stage.—Full doses of ordinary astringent medicine with opiates.

Native Surgeon M. IYASAWMY, Cuddapah.

For Diarrhœa during cholera epidemics, 1st stage.—First or premonitory stage. Nitro-sulphuric acid (diluted) in from 20 to 30 drops in peppermint water after each loose motion. In severe cases is added to each dose of the above 15 to 20 drops of laudanum. Should the disease begin with vomiting, and any indigestible food thrown up, the stomach is cleared with a mustard emetic before giving the acid mixture. Diet, rice gruel or arrowroot.

2nd stage.—Second or stage of collapse. acetate of lead in combination with calomel in the following form: Plumbi acet. gr. ij., Calomelas gr. i., Camphor gr. i., Pulv. cantha. gr. ½, Pul. chillies gr. ½, mft. pill i. every hour or half hour, according to the urgency of symptoms, administered in powder instead of in pills is better. Wet bandage, 6×6 feet round the abdomen, and effervescing draughts of soda carbonas, ammo. carbo. and acid citric, containing from 5 to 10 drops of chloroform. Thirst, free use of mild diluents, iced soda water or lemonade, and small pieces of ice. For cramps, the following liniment: Ol. terebinth ʒi., Acid. sulph. ʒiij., Ol. Oeliva, the following draught in rousing the action of the kidneys. R. Potass. chloras gr. v., Soda carbonas gr. iv., Chloric æther ʒss. mist., Camphor ʒj. mft. Haust. every hour or oftener if necessary.

3rd stage.—Third or stage of reaction is treated according to symptoms. If the head symptoms predominate, blisters to the nape of neck, mercurial unctions to the groins and axillæ, mild salines, turpentine enema. Weak broths, sago with portwine, or arrowroot boiled in milk, throughout the illness.

Dr. C. A. ANDREWS, Kurnool.

For Diarrhœa during cholera epidemics, 1st stage.—Carbolic acid, sulphate of iron, or any other remedy having the power of destroying low forms of organic life given, and strength maintained by soup and wine or brandy in moderate quantities. For excessive purging, sulphuric acid with small doses of laudanum, not sufficiently powerful to stop the discharge altogether. For vomiting, effervescing draughts with hydrocyanic acid; sinapism to epigastrium.

3rd stage.—In collapse, careful watching and nursing; cooling drinks and warmth to the extremities and abdomen. Stimulants, such as ammonia and brandy, and soup or conjee, in small quantities. To promote the return of the secretions, cold to the head, blistering to the nape of the neck. Dry cupping over the region of the liver and kidneys, and gentle laxatives and diaphoretics. Wine, soup, or other light nourishment.

Assistant Apothecary T. EVERARD, Trichoor, Detachment 23rd Regiment L. I.

General treatment without mentioning stages.—If there be a probability that the attack was induced by the use of unwholesome food, I would first administer a mustard emetic, after which I would use diluted acetic acid only, ½ an ounce of acetic acid diluted with an equal quantity of cold water every 10 or 15 minutes, according as the case demands it.

Dr. G. WHITTON, Cochin.

For Diarrhœa during cholera epidemics, 1st stage.—½ a drachm of tincture of opium with peppermint water and a dessert-spoonful of brandy, half the above quantity being repeated a short time after should the symptoms persist, in the case of premonitory diarrhœa. In the further stage, astringents, such as the following: Acetate of lead, preparations of catechu and gallic acid, warmth to extremities, frictions with turpentine, mustard sinapisms to epigastrium, and, when the diarrhœa has been to some degree checked, a combination of blue pill camphor and quinine.

Surgeon M. C. FURNELL, Ootacamund.

General treatment without mentioning stages.—Simple drink, (gum water or lime juice and sugar to allay thirst); nourishment in small quantities, such as chicken broth, beef-tea, iced water repeatedly administered, and, if they can be borne, stimulants such as soda and brandy. An enema of opium and conjee-water, and friction with hot sand-bags to promote the circulation and sustain animal heat in the extremities.

Native Surgeon ANTHONY, Ramnad.

General treatment without mentioning stages.—Two Patterson's pills followed by a stimulant draught made of a little spts. ammo, aromat., brandy and peppermint water, and continue one pill after every hour till about ten are given. In vomiting, a small dose of brandy, about an ounce, with some strong mutton or chicken broth, is injected into the rectum, and repeated as often as necessary. Mustard poultice, and sometimes blister, is applied to the epigastrium. But small doses of calomel have had great effect in checking vomiting. For thirst, small quantities of cold water in repeated draughts. For cramps and algidity of extremities, blisters in the calves, turpentine and ordinary frictions, hot bottles and sand-bags to extremities. When cramps extend to stomach, and the abdomen is bloated and tympanitic jactitation increases, breathing becomes laborious and pulse sinks, the above is to be discontinued. In coma, blisters to the neck and small doses of calomel. Places much confidence in Patterson's pills and calomel.

Surgeon W. H. HARPER, Quilon, 23rd Regiment W. L. I.

For Diarrhœa during cholera epidemics, 1st stage.—A pill of 5 to 10 grains of calomel and a grain of opium. Should it be rejected, a mustard plaister to the epigastrium and pill repeated, and one or other of the following: 1st.—R. Plumbi acetatis gr. xxx., Acid acet. m. x., Aqua dist. ʒvi., 1 oz. or ½ oz. every hour. 2nd.—R. Mixtura creta, ʒi., Tinct. catechu, tincture kino aa. ʒi. after each loose stool. 3rd.—R. Acedi sulphurici dil. m. xxv., Tinct. opii. m. xv., Æther chlorici m. x., Aqua menthæ pip ʒvi., mft. to be repeated every hour or half hour, according to circumstances. Cholera pills (Patterson's) with and without opium are both useful.

2nd stage.—For vomiting, effervescing draughts with or without prussic acid, cold soda water in small quantities with prussic acid, or the hypodermic injection or morphia. For cramps, friction with the bare hand, powdered ginger, chloroform, turpentine, &c. Iced water or small pieces of ice for thirst. As the pulse flags, weak brandy and water in spoonful or champagne.

3rd stage.—A single dose of calomel and opium, or the astringents. Small doses of æther and ammonia, or weak brandy and water, or champagne. If pulse improves, the stimulants may be

continued. If collapse is protracted, spiced conjee with a little portwine, or cold chicken broth, beef-tea, &c. In minor degrees of collapse, from minims 40 to a drachm of aromatic spirits of ammonia, or half a drachm of sulphuric æther with iced or camphor water every hour or half hour with an occasional table-spoonful of brandy and water may be given, and continued if pulse be gaining power. Cramps and thirst are to be treated in the same way as in the earlier stage. For dyspnœa, large turpentine stupe to the chest.

General treatment without mentioning stages.—When reaction is setting in, light food, such as arrowroot, barley-water and milk, (when necessary, with lime water). On the approach of uræmic symptoms, loins should be cupped or leeches, and draughts of cold water or some simple diuretic mixture given every three or four hours. Calomel and castor oil to cause serivation to the bowels, head shaved, and blister to nape of neck. When secretion of urine is re-established, opiates, when indicated, may be given with less circumspection. Tonic doses of quinine. Sequilæ to be treated on general principles.

Assistant Surgeon R. WILSON, Palamcottah.

For Diarrhœa during cholera epidemics, 1st stage.—Astringents, opiates, and quiet, viz., chalk mixture with opium and catechu, acid sulphuric dil. and opium, &c.

General treatment without mentioning stages.—In the stage of alged collapse, brandy in doses of ʒss. to ʒj. every half hour. Frictions to all the extremities, with mustard and spirits terebinth during the whole time of collapse. Large mustard poultices to chest, abdomen, and spine. Cold water in moderation. In reaction, brandy with much caution, and in less quantities and at longer intervals, and soon withdrawn altogether. Frictions omitted. A little warm milk, milk and arrowroot if the stomach is not too irritable. If stomach is irritable, a few doses of 5 to 10 minims of chloroform in an effervescing draught. For uræmic symptoms, hot bath, dry cupping to loins, and diaphoretics. Cerebral congestion, shaving the scalp, cold evaporating lotion to the head, warmth to extremities, and a blister to the nape of neck if necessary. Attention is directed to the secretion from the kidneys and nourishment given in the shape of milk and arrowroot, beef-tea or mutton broth and wine, if this does not increase the delirium. For gastro-enteric congestions, fomentations and hot poultices to abdomen, and anodynes and enemata of warm water containing alum and xl. minims of tinct. opii.

Assistant Surgeon H. C. MAYER, Salem.

For Diarrhœa during cholera epidemics, 1st stage.—A pill of 5 grains of calomel and 1 grain of opium, accompanied by a draught of spts. ammonia and mixture camphoræ 1 drachm and 1 oz., respectively. Two doses only in favorable cases. Chlorodyne is given in some cases with advantage. If the case advances, 2 grains of calomel and 5 grains of soda are administered every hour steadily till a change takes place. Stimulants externally of hot bottles, turpentine frictions, and covered with a cumby; and internally, of a mixture composed of brandy, ammonia, and soda. Cramps treated by friction and sinipisms and excessive vomiting by effervescing draughts.

General treatment without mentioning stages.—In reaction, calomel is given at the interval of three or four hours till reaction fully sets in. Where purging and vomiting stop altogether, medicines are discontinued; where urine is delayed, a powder of soda and nitre is given. If urine is not voided still, the patients get into a semi-comatose state, attended by oppression in the chest. Skin may or may not be warm, but generally harsh and dry. The above powder is still continued, assisted by hot fomentations, sinapisms, sometimes dry cupping to loins, blister to nape, and stimulants to chest. In diarrhœa and dysentery after this, astringents, preceded by oil and laudanum. If vomiting continues also, effervescing draughts with sedatives, sinapism, or blister in obstinate cases being applied to stomach.

Surgeon A. SANDERSON, Hingolee.

For Diarrhœa during cholera epidemics, 3rd stage.—If the patient had symptoms of collapse, he was put to bed, well covered over with cumblies, bottles of hot water were put

between his legs and to his feet, and he was allowed to drink cold water *ad libitum*. Thinks the cumblies and warm bottles do no good. When the skin is bedewed with perspiration, it is wiped now and then with a soft towel or cloth. Spasms of the extremities and cramps of the stomach are relieved, the former by frictions with the liniment opii co., the latter by chloroform applied to the epigastrium as well as given internally in doses of five or six up to ten drops. During collapse, hot brandy and water, a tea-spoonful every ten minutes. In future, during collapse, endeavours to diminish the irritability of the stomach will be made, and, so soon as fluids are retained, milk diluted with well-cooled soda water in small quantities will be given. As reaction sets in, increase the milk and soda water; and, should the pulse flag, add a tea-spoonful of brandy occasionally.

Surgeon G. A. BURN, Mominabad.

General treatment without mentioning stages.—Strong dose of laudanum and brandy at first, then the free administration of calomel with small doses of opium. Stimulants as indicated, and the use of sinapisms and frictions.

Sub-Assistant Surgeon J. A. BINGAR, Oomrawuttee.

General treatment without mentioning stages.—Stimulants and astringents such as peppermint water, laudanum, aromatic spts. of ammonia, and sometimes assafoetida, with embrocations of turpentine, &c., to relieve pain and cramps of stomach and limbs. Cold water *ad libitum*, and effervescing draughts. Sinapisms to stomach, chest, and calves of legs, as the case progresses. Constant and continued frictions, either dry or moist, have a good effect. Juice of the bark of the root of the Butea Frondosa "Pullans," in 1 ounce doses has a very good effect; it checks retching, but does not at once check the purging. Peppermint water is used with it. During its administration, the patient has only weak ginger tea when the vomiting ceases. No conjees whatever.

Apothecary P. CHAMARETT, Yeotmahl.

General treatment without mentioning stages.—A table-spoonful of common salt in 4 ounces of cold water, after which 1 ounce of the mixture of saline medicines. R. Soda bicarbonas ʒs., Sodii chloridum ʒs., Potassa bicarbonas ʒss., Potassæ Tartras Acid ʒss., Potassæ chloras ʒij., Aqua oij. every 15, 20, or 30 minutes, or at longer intervals, according to urgency of symptoms. Diet, conjees, beef-tea, and mutton or chicken broth. In great collapse, ten drops of liquor arsenicalis is given every hour or two, until six doses are retained. For suppression of urine, 20 drops of spts. æther nitrosi is added to each dose of saline mixture.

External applications.—Frictions with soap liniment and turpentine, hot water in tins or bottles, or hot sand in bags to extremities, and mustard poultices. After reaction, the treatment according to symptoms present, in addition to the saline treatment at longer intervals.

Assistant Surgeon H. GRIFFITH, Hoosungabad.

For Diarrhœa during cholera epidemics, 1st stage.—Grain ½ of acetate of morphia in combination with grs. v. of Acetate of lead, and, in some instances, with camphor. Demulcents, diluents, and hot animal broths.

2nd stage.—Nourishing drinks, strong beef-tea *ad libitum*, either cold or warm; the same as a frequent or hourly injection combined with champagne, portwine, or, if not available, brandy, and an occasional dose of some diuretic as nitre. Friction to the limbs, and sinapisms over the abdomen, spine, and lumbar region. Morphia in small quantity on a scarified surface will relieve the spasms and pain at the epigastrium. Ice to be continually sucked for intense heat or thirst.

3rd stage.—To be left to nature, careful watching and nursing, and symptoms being treated as they arise.

Apothecary H. WALE, Kusselcondah.

For Diarrhœa during cholera epidemics, 1st stage.—Saturated spirits of camphor m. v. every ten minutes early in the disease, water occasionally with conjee or broth. Chlorodyne also

very good. Also the sulphuric acid in combination with laudanum; Bastion's mixture, also Patterson's cholera pills.

General treatment without mentioning stages.—Careful watching and nursing. Spirits of camphor or chlorodyne given early in the disease. Animal broths or conjees with wine in the stage of collapse. External warmth and frictions if necessary.

Assistant Surgeon B. T. SUFFREIN, *Rangoon.*

General treatment without mentioning stages.—Dr. Mudge's turpentine mixture and the acetate of lead with opium to check the vomiting and purging, and the free use of stimulants and counter-irritation by sinapisms, turpentine stupes, &c., during stage of collapse.

Surgeon Major W. BURN, *Rangoon.*

General treatment without mentioning stages.—A rational method of treatment, that is, meeting the symptoms as they arise and at their earliest advent, no two cases being *precisely* similar, appears the only justifiable course.

Assistant Surgeon J. RIDINGS, *Singapore, 8th Regiment N. I.*

For Diarrhœa during cholera epidemics, 1st stage.—Chloroform and chlorodyne, aromatic stimulants, and effervescing draughts; sinapisms to epigastrium. Strong soups, beef-tea, &c., and a moderate quantity of brandy and soda water, or preferably, champagne.

2nd stage.—The "saline" treatment. R. Potassæ chloratis gr. v., Soda bicarb. ℥j. Sodii chloridi ℥ji., Aqua ℥ii. mft. Haust. to be taken every hour, or if there is any tendency to collapse present, every half hour, until the re-appearance of urine, when it may be omitted, and draughts of the bitartrate of potash substituted. Drink as much as possible to be given. He should be warmly covered, and placed in a thorough draught or under the influence of a thermantidote.

FORT SAINT GEORGE,
4th February 1869.

(Signed) W. MACKENZIE, M.D.,
Inspr. Genl., Indian Medl. Dept.

Transferred to the Public Department.

FORT SAINT GEORGE,
1st March 1869.

(Signed) H. MARSHALL, Major-General,
Secy. to Govt., M. D.

No. 60.

ORDER THEREON, 10th March 1869, No. 294.

The Government have received, with much interest, the communication from the Inspector General, Indian Medical Department, above recorded, recommending the establishment of Cholera Hospitals, with a special staff of Medical Officers and attendants; the main object of these institutions being to secure the experimental trial of old and new methods of treatment of cholera, under circumstances favorable to the scientific investigation and record of all the phenomena of the disease.

2. Before passing any final opinion on the proposal of the Inspector General, and submitting any definite scheme for the sanction of the Government of India, His Excellency in Council requests that Dr. Mackenzie will submit a detailed plan for a Cholera Hospital at the Presidency, or some other station selected by him, with an estimate of the establishment and expenditure entailed by such an institution.

3. It should also be considered whether, the locality for the head quarters of such an Hospital being fixed, it would be desirable to put it upon such a footing that, on the occurrence of a serious outbreak of cholera, a flying Hospital could at once be detached from the parent institution and sent to the infected locality for the treatment and study of this disease.

(Signed) R. S. ELLIS,
Chief Secretary.

MILITARY DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following papers :—

From the Inspector General of Hospitals, Upper Provinces, Simla, 4th October 1867, No. 8; to the Secretary to the Government of India, Military Department.

I have the honor to forward, for the information of the Governor General, a report on the progress of cholera, which originated at Hurdwar and spread over the Upper Provinces. The pilgrims carried the disease with them to their homes all over the country. It was communicated to the residents, and the mortality has exceeded 26,000. This is far under the real mortality, as many of the bodies of the pilgrims, who died on the road, were burned, or thrown into the canal, by their relatives and friends, and thus their deaths were not recorded by the Police Authorities. The recurrent attack, at the usual season, which has appeared as anticipated, is not here included. I will forward a complete return at the end of the year.

2. The history of this epidemic demonstrates the communicability of cholera beyond any reasonable doubt, and shews some of the means by which it is communicated. It confirms the soundness of the principles on which the Orders of Government for the removal of troops in epidemics are based.

3. Much benefit would arise from collecting the opinions of the most experienced Medical Officers in India, on the *treatment* of the disease, which is, at present, most unsatisfactory, both in Europe and India. The plea that it is useless to indicate a remedy till the nature and essence of the disease is known, is futile. Of no disease have we this perfect knowledge, yet the best way of treating other diseases has been indicated by acknowledged medical authorities. This is wanting in the case of cholera. The remedies used in the Paris and London Hospitals, during last year, were of opposite characters, and the value of none has been established.

The more I observe the result of the treatment of cholera, the more I feel convinced that much good may be done in the earlier stages, and much injury in the later stage of collapse, when the powers of life are for a time suspended. In investigating these points much information must be available from the experience gained in the numerous attacks which have recently visited India, and which appear to be increasing in frequency both here and in Europe. Though a specific remedy may not be discovered, a practical guide may be found, by which many lives, now lost, may be saved.

I would beg to suggest the formation of a Committee of Medical Officers from all the Presidencies, and of both services, to report on the nature, causes, and treatment of cholera.

From the Secretary to the Government of India, Military Department, Simla, 22nd October 1867, No. 508; to the Inspector General of Hospitals, Indian Medical Service, Upper Provinces.

I am directed to acknowledge your letter, No. 8, dated 4th instant, submitting a report on the outbreak of cholera this year in various parts of the Bengal Presidency, and recommending the formation of a Committee of Medical Officers from all the Presidencies, and of both the Indian and British Medical Services, to report on the nature, causes, and treatment of the disease.

2. In reply, I am to convey to you the acknowledgment of the Right Honorable the Governor General in Council of the pains you have taken to procure the information contained in the report, and to acquaint you that, whilst he is not quite prepared to attribute the outbreak of the disease to the Hurdwar pilgrims who may possibly have been attacked earlier by, and suffered more severely from it, owing to their being more susceptible (as such large bodies appear to be) to the atmospheric or other influences which may have produced the disease in the Upper Provinces generally,—His Excellency in Council concurs with you in thinking that, by obtaining and carefully comparing the opinions of Medical Officers of most experience in India, some practical guide to the best treatment of cholera may perhaps be found, though there may be no reasonable hope of the discovery of any specific remedy for the disease.

3. The inquiry however should, His Excellency in Council thinks, be confined to the *best methods of treatment*, and copies of your report and letter will accordingly be forwarded to the other Presidencies, and to the local Government and Administrations, who will be requested to obtain the opinions of Medical Officers of both services, whose experience of the disease has been greatest, as to the best methods of treating cholera in its various stages, and under the various conditions and circumstances in which it may occur; such reports and opinions to be in as concise a form as possible consistent with the end in view.

Govt. of Madras

PUBLIC.

To

THE INSPECTOR GENERAL

OF HOSPITALS, CALCUTTA.

Dated Madras, 10th

Nov.

G. O. No. 1000, 10th Nov. 1867.

MARCH.

Nos. 59-60.

Calling for certain information regarding the proposal to establish a Cholera Hospital at the

4. The assembly of a Committee as you propose, at any rate in the present stage of the inquiry, His Excellency in Council considers unnecessary.

MILITARY DEPARTMENT, FORT WILLIAM, THE 14TH NOVEMBER 1867.

No. 469.

Copy of the above, with printed copy of the report, forwarded to the Secretary to Government, Fort Saint George, Military Department, with a request that the Right Honorable the Governor in Council may be moved to cause the inquiries decided by the Government of India to be set on foot, as early as convenient, and the report submitted for the information of the Governor General in Council in due course, with any remarks that may appear to be called for.

(By Order,)

(Signed) W. M. LEES, Major,

Asst. Secy. to the Govt. of India.

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 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 Musselmen, 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 shewn 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 diarrhoea; 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 Turace, at the foot of the Himalaya Mountains. In February, cholera was prevailing in the Turace 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 6 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 Turace were collected; but from the 3rd to the 13th April, only one case of the pilgrims from the Turace was treated in the Bijnore camp, by Dr. Gardner. The simultaneous 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 thunder-storm 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 23rd 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 Akbar'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

* 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.

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 great many bullock hackeries and bhylces, 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 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 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, shewing 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 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 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 Rooper. 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.

* 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 Kullian (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 Hakem 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 Rooper, 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."

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.

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 Pairs 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 necessaries 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 gasses. 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 ailments 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 hakeries 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 deaths 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 *kismet*, or fate, like those in 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. }

(Signed) JOHN MURRAY, M. D.,
Inspr. Genl. of Hospitals, Upper Provinces.

ing towards the
rd, 24th, 26th,
only was the fall
11th, and early
a

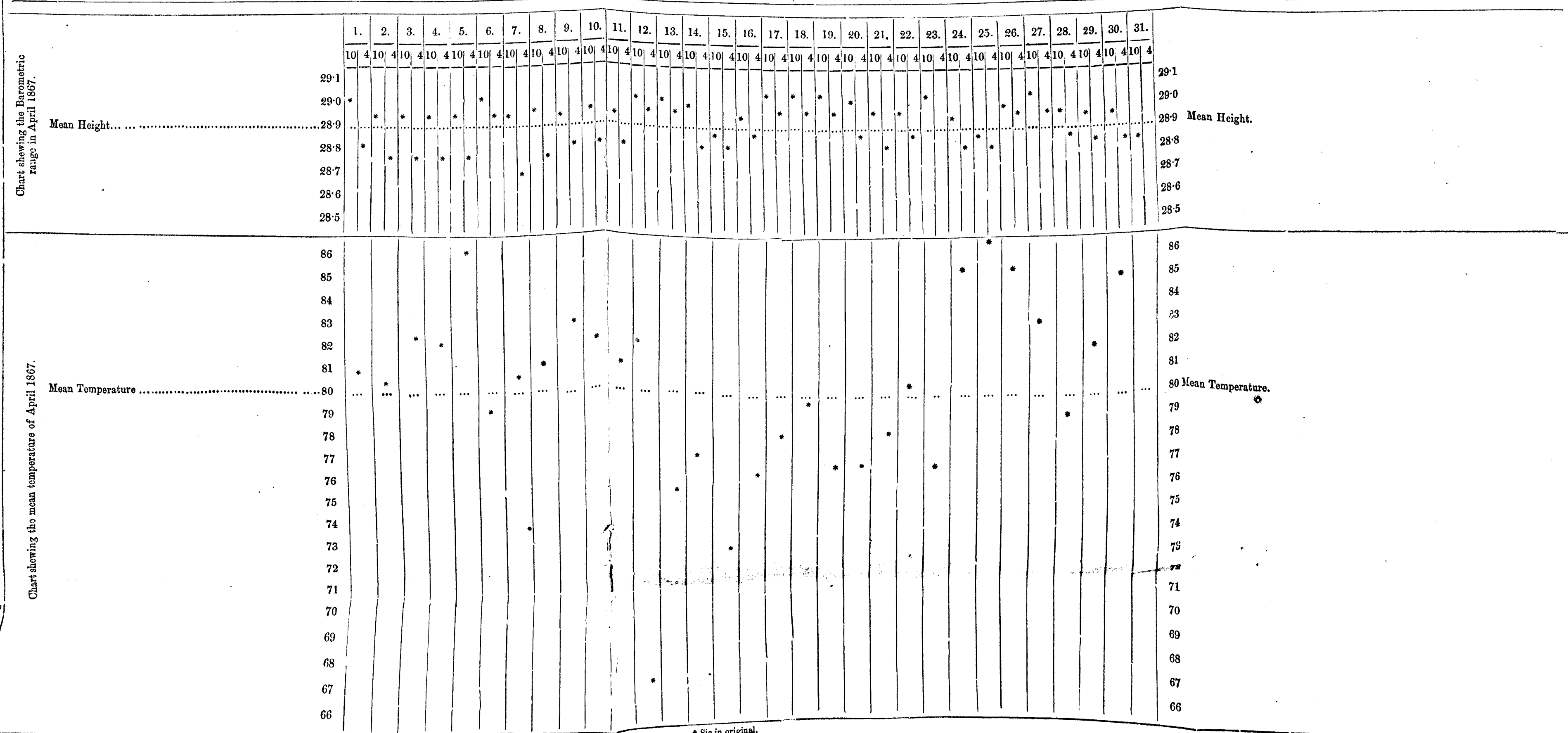
; but the wind
(There were high
evening of the
this, to the end
its direction:
ong north-east

daily maximum
ch was 56.7 in
il as compared
, taken in con-
monthly mean
the night 51.5.

TABLE No. 1.

Abstract of Meteorological observations made at Roorkee by Dr. Murray (Thompson.)†

STATIONS. With Latitude and Longitudes and Heights above sea level in feet. (Latitude is North, and Lon- gitude East.)				BAROMETER.												HYDROMETER.								THERMOMETER.												Rain.		WIND.										Force average number of miles per day.								
				4 A. M.			10 A. M.			4 P. M.			10 P. M.			Dry and wet Bulb.				Dew point.		Elastic force of vapour.		Relative Humidity.		Exposed.				In shade.																										
				Maximum pressure and date.		Mean.	Minimum pressure and date.		Mean.	Minimum pressure and date.		Mean.	Minimum pressure and date.		Mean.	Minimum pressure and date.		10 A. M.		4 A. M.		10 a. m.	4 p. m.	10 a. m.	4 p. m.	10 a. m.	4 a. m.	In sun's rays.		On grass.		Maxima in shade.			Minima in shade.			Mean daily range.	Monthly mean temperature.	Six inches below ground.																
				Dry.	Wet.		Dry.	Wet.		10 a. m.	4 p. m.		10 a. m.	4 p. m.		10 a. m.	4 a. m.	Maximum and date.	Mean.	Minimum and date.	Maximum and date.							Mean.	Minimum and date.	Maximum and date.	Mean.	Minimum and date.	Maximum and date.	Mean.	Minimum and date.	Mean	10 a. m.			4 p. m.	Number of rainy days.	Maximum fall and date.	Total fall.	Ozoree.	N.	N. E.	E.		S. E.	S.	S. W.	W.	N. W.	Calm.	Hour.	
Latitude.	Longitude.	Height.	18th	Mean.	15th	18th	Mean.	15th	12th	Mean.	7th	16th	Mean.	3rd	86.3	65	91	65	50.	47.	373	338	314	224	19th	123.	87.8	66.	57.	50.	102.6	95.	73.7	74.4	66.	59.7	29.	80.	78.	86.	12.	52	52	1.5	0	3	0	3	0	3	5	2	14	10 a. m.	4 p. m.	5.99
Roorkee.	29° 52'	77° 57'	880	28.945	28.859	28.771	29.058	28.945	28.848	28.910	28.849	28.713	28.977	28.884	28.794	86.3	65	91	65	50.	47.	373	338	314	224	19th	123.	87.8	66.	57.	50.	102.6	95.	73.7	74.4	66.	59.7	29.	80.	78.	86.	12.	52	52	1.5	1	3	0	0	0	6	10	8	2	4 p. m.	5.99



† See in original.

TABLE N.

[illegible]

Progress of Cholera from Hurdwar Fair, where it appeared on the

LE No. 2.

April 1867, and was spread by the Pilgrims over the country,—(Concluded.)

April 1867, and was spread by the Pilgrims over the country,—(Concluded.)																									
Direction or route.		No. 1.—West—to Mooltan, <i>via</i> Umballa and Umritsir. North-west—to Peshawur from Umritsir.						No. 2.—South-west—to Hissar, <i>via</i> Kurana.						No. 3.—South to Allahabad, <i>via</i> Meerut.						No. 4.—South-east to Oudh, <i>via</i> Bijnore.					
General distance from Hurdwar.		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.	
Miles over.				Miles.		Days.		Days.				Miles.		Days.		Days.				Miles.		Days.		Days.	
200	Jullunder	201	.....	.....	4th Sept.	17	Hissar	180	21st April	17	25th April	84	Akrabad	181	30th April	22	.....	37	Phillibet	185	18th May	.....	.....	32	
	Jugraon	205	26th April	2	4th May	26	Rewaree	180	22nd "	.....	.....	70	Hattrass	181	26th "	.....	.....	.....	Almorah	192	25th "	.....	.....	57	
	Rackote	210	26th "	7	12th "	14	Ferozepore	195	25th "	.....	.....	67							Shahjehanpore...	198	24th "	.....	.....	95	
	Muhna	217	28th "	.....	5th "	8	Roorce	197	.....	.....	23rd	91													
220	Moga	224	27th "	.....	.....	.....	Futtiabad	208	22nd "	16	26th	93	Muttra	205	.....	.....	26th April	10							
	Issakhan	228	28th "	.....	.....	.....	Sirsa	210	22nd "	32	22nd	93	Saidabad	210	19th "	.....	.....	.....							
	Dugroo	231	6th May	.....	.....	.....							Agra	210	21st "	3	.....	.....							
													Secundra	216	.....	.....	28th May	8							
240	Moodkee	240	4th "	.....	24th April	.....	Raneo	222	.....	.....	1st	82													
	Gull	245	24th April	.....	.....	.....																			
	Ferozshah	248	13th May	.....	23rd "	.....																			
	Umritsir	255	21st April	.....	24th "	95																			
	Ferozepore	258	24th "	.....	.....	.....																			
280	Lunday Rora ...	280	12th May	.....	.....	.....	Dubwalla	246	22nd "	2	22nd	84	Mynpooree	243	24th "	.....	.....	.....							
	Hajee Wattoo ...	286	19th "	.....	.....	.....	Mulloul	251	24th "	2	1st	64	Etawah	277	.....	.....	.....	.....							
	Dooda	290	29th April	.....	.....	.....							Futtyghur	278	.....	.....	.....	.....							
	Lahore	291	24th "	.....	27th May	120																			
	Sealkote	296	5th May	2	7th "	11																			
300	Jhoj Kulan	300	28th April	1	30th April	16	Jeypore	280	24th "	.....	28th	126	Cawnpore	348	25th "	.....	.....	100	Lucknow	311	.....	.....	.....	.....	
	Bukka Jhoj	308	.....	.....	12th May	.....																			
	Kangra Walla ...	308	.....	.....	18th "	.....																			
350	Montgomery ...	387	25th "	6	30th April	16																			
	Jhelum	394	.....	.....	.....	.....																			
400	Shapore	406	.....	.....	.....	.....	Deolee	420	.....	.....	26th	33	Hummeerpore ...	400	.....	.....	2nd July	30							
	Jung	410	.....	.....	1st July	17											.....	.....							
	Rawul Pindie ...	461	.....	.....	7th May	11											.....	.....							
	Goozranwalla ...	480	5th May	1	.....	.....											.....	.....							
500	Murree	500	.....	.....	29th June	25											.....	.....							
	Mooltan	508	26th April	11	5th May	140											.....	.....							
	Hazara	510	.....	.....	16th "	3											.....	.....							
	Dera Ishmail ..	515	.....	.....	.....	.....											.....	.....							
	Khan	522	.....	.....	21st July	9											.....	.....							
	Attock	522	.....	.....	29th June	2											.....	.....							
	Nowshere	540	.....	.....	.....	.....											.....	.....							
	Dera Ghazee ..	548	.....	.....	.....	.....											.....	.....							
	Khan	548	.....	.....	.....	.....											.....	.....							
Kohat	543	.....	.....	12th "	78											.....	.....								
	Peshawur	561	.....	.....	.....	.....											.....	.....							
700	Cabool	740	.....	.....	16th July	60											.....	.....							

SIMLA, 12th September 1867.

SIMLA, 12th September 1867.

(Signed) JOHN MURRAY, M. D.,
Inspr. Genl. of Hospitals. Upper Province

ORDER, No. 4825, 14th December 1867.

Communicated to the Inspector General of the British and Indian Medical Departments respectively, in view to the inquiries decided on by the Government of India being set on foot as early as practicable, and the result reported to Government in the Military Department, for transmission to the Government of India.

(True Extract.)

Major General,

Secretary to Government.

To the Inspector General British Medical Service.
" Inspector General Indian Medical Department.
" Adjutant General.
" Quarter Master General.
" Sanitary Commissioner.

Exd. J. E. Cashart.

[Faint handwritten notes at the top of the page]

[Faint handwritten notes in the middle of the page]

[Faint handwritten notes at the bottom of the page]

[illegible]

Read the following letter *from the*
Supr. Genl, Indian Medical
Department.
(Here enters 4th Feby 1896 No 45.)

Or der themen 5th March 1869 No 284

1000

perimenteral

experimental trial of old and new methods of treatment of Cholera, under circumstances favorable to the scientific investigation & record of all the phenomena of the disease.

2. Before passing any final opinion on the proposal of the Inspector General, and submitting any definite ^{scheme} proposal for the sanction of the Government of India, His Excellency in Council requests that Dr Mackenzie will submit a detailed plan for a Cholera Hospital at the Presidency or some other station selected by him, with an estimate of the establishment & expenditure entailed by such an institution.

It

I shall be glad to see Dr Mackenzie's plan in greater detail. As soon as I get it I shall send it to the Board under the sanction of the Government. I shall have been very glad to see it about a month ago. I shall be glad to see it.

Memo. for Anderson No. 587.

The orders of Government are respectfully submitted on the suggestion of the Inspector General of the Indian Medical Department that a provision for the establishment of a Cholera Hospital in this Presidency be made to the Government of India.

The orders of Government are respectfully submitted on the suggestion of the Inspector General of the Indian Medical Department that a provision for the establishment of a Cholera Hospital in this Presidency be made to the Government of India.

Attest

I think with all the apparatus necessary & it might go down to any place suddenly visited by cholera in the country. I think it is a very good idea.

3. It should also be considered whether, the locality for the Headquarters of such an Hospital being fixed, it would be desirable to put it upon such a footing that, on the occurrence of a serious out-break of cholera, a flying hospital could ~~move~~ at once be detached from the parent institution & sent to the infected locality for the treatment and study of this disease.

RM

To the Inspector General, Indian
Medical Department.

Pub. L. No. 100
 August 1869
 when in Committee,
 the 3 of 1871.

Cont. of 186 1 211 and 186
 Public

To
 the House of Representatives
 of the 31st Congress
 1869

Dated 10 Dec 1869 } 1869, No. 294
 Recd.

Nos. 59000

Calling for certain information
 on the subject of the
 1869 and 1871.

The 31st Congress