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PART I.
ORIGINAL COMMUNICATIONS.

ART. VIII.—*Observations on Cholera, and especially on its Mode of Propagation.* BY ROBERT J. GRAVES, M. D., F. R. S.

SINCE the publication of my last paper in this Journal, on the propagation of cholera, the disease has committed considerable ravages in Great Britain and Ireland. The history of the epidemic, in these islands as well as in Europe, leaves no doubt that its appearance is not connected with the prevalence either of cold or heat, of dryness or moisture. It arose in Bergen, in Norway, in the month of January, exhibiting excessive virulence, and occasioning an almost unprecedented mortality, during cold so severe that mercury never thawed; and it prevailed in Dublin, in unusually hot weather, throughout the months of June and July. While the disease raged in Glasgow, the weather was very wet and rainy; but while it prevailed in Limerick and Dublin, almost uninterrupted

drought was complained of. During the recent visitation, the epidemic was not observed to prevail in localities possessing all the physical requisites so much dwelt on by the advocates of the endemic origin of cholera, more than in others entirely free from malarious influences. It was not found to frequent those parts of Dublin nearer to the river more than those remote from it; neither did a greater number of cases, in proportion to the population, occur in the poorer and less healthy districts of the town, than in the more opulent and better situated quarters. It was to be found equally in the most elevated parts of the city, such as High-street and Thomas-street, and in Luke-lane and Brunswick-street, which are situated nearly on a level with the river. The best ventilated and drained streets were not more exempted than those in an opposite condition; thus many cases were observed in Merrion-row, Upper and Lower Baggot-street, Wellington-road, and Pembroke-street, and also in some of the most healthy outlets, such as those in the vicinity of Rathgar.

It is a fact worthy of being recorded, that in Tralee, the best part of the town, that which is occupied by the more wealthy inhabitants, was the part chiefly devastated; the well clad, the rich, and the temperate were carried off, while the poor and intemperate who inhabited the lower quarter escaped. In Limerick, too, it was remarkable that the disease claimed many victims in the lunatic asylum, although that establishment is extremely well ventilated, and is a model of cleanliness and good management, and quite free from all the circumstances, such as damp, bad odours, or crowding, to which the origin of the disease is commonly attributed. In the case of the unfortunate inmates of the lunatic asylum, it is obvious that neither fear nor their imagination could have had any influence in promoting the spread of the disease; and as the diet of these persons was particularly good and regular, the contrast between their state and that of the prisoners in the Limerick gaol was in many physical circumstances very striking; for in

the gaol all manner of nuisances necessarily abounded, in consequence of the enormous number of prisoners who were crowded into that establishment, the number far exceeding that which the gaol was originally intended to accommodate. And yet, strange to say, while, as I have already mentioned, the inmates of the lunatic asylum suffered so much from cholera, the prisoners in the gaol altogether escaped. It is singular that, in opposition to facts such as these, Mr. Wakley, M. P., the coroner for Middlesex, should have ventured to assure the gentlemen composing the jury on a coroner's inquest held upon a person who died of cholera, "that he had never known a well-fed person die of the disease." Mr. Wakley's experience may miraculously support his theory, and must have been wonderfully relished by a well-fed metropolitan jury; but in Dublin, neither corpulence nor even extreme obesity were found to protect those who enjoyed such advantages from the shafts of the destroying angel. Two remarkable cases of death from cholera occurred in persons of unusual fatness; one of the victims was of such enormous size as to have surpassed all the previous practice of the Cook-street coffin-makers. According to my own experience, and that of most of my medical friends of this city, neither enjoyment of the best health, nor youth, nor temperance, nor an athletic frame of body, seemed to afford protection. The strong appeared to contract the disease as often as the weak, the young as the old, the temperate as the intemperate; and the infant at the breast fell a victim as rapidly as the mother who nourished it.

I regret to state, and the statement is corroborated by many other physicians in Dublin, that the type of cholera has not lost any of its virulence, and is fully as bad, if not worse than when it appeared here in 1832 and 1834. Seeing then the intense fatality of this epidemic, and its wonderful diffusion over the whole civilized world, it becomes our duty now, more than ever, to study attentively and seriously the laws which regulate its propagation. Deeply impressed with the respon-

sibility which attaches to every one who takes upon himself to pronounce an opinion upon a question so important, I have deemed it to be my duty to watch the progress of the epidemic in Dublin with the greatest attention, for the purpose of collecting new and authentic facts bearing on the question of its contagiousness. These facts I shall now proceed to make public, arranging them in a certain order.

First, Instances of cholera transplanted, as it were, from one locality to another, and spreading in the latter.

1. Mr. Shaw, of Earl-street, was called to see a Mrs. B., who was suffering from an attack of cholera. A friend of this lady, a Mrs. G., residing at the distance of half a quarter of a mile, came to attend her, having at the time an infant at her breast, which she brought with her. During Mr. Shaw's attendance on his patient, who subsequently recovered, Mrs. G. requested his attention to her own infant, who was ill, and, as she thought, suffering from the effects of cutting a tooth. The child, however, was evidently labouring under an attack of cholera, and died the same night. The mother returned home, and was attacked the next day, and shortly after three of her children also contracted the disease: the mother and three children all died.

2. Dr. M'Cormac, of Belfast, communicated to me the particulars of the following awful visitation:

A paper manufacturer, named Blow, living in Belfast, sickened nearly at the same time with his wife, and both died of cholera; their son shared the same fate; the female servant in the house and a man servant were seized with symptoms of the disease, but recovered. Mrs. Blow's brother, Mr. Miller, who resided at a distance, on the Carrickfergus shore, visited his sick sister, contracted cholera, and died in his own house. His nephew, Mr. Shaw, visited Mr. Miller, and also died of the disease, in his lodging below Hollywood. Mr. Shaw was attended by his sister, who took the malady and died likewise. They were both brought into town for interment in the same

hearse. This is an instance of double transplantation; from Belfast to the Carrickfergus shore in the first instance, and from the latter place to Hollywood in the second. Another fact connected with this case is especially deserving of attention. Three women, sisters, who were employed to wash the linen, bed-clothes, &c., of the deceased Mr. and Mrs. Blow, were assisted by a young girl; these four individuals all contracted the disease, and died within a few hours of each other, as did also a carter who assisted in placing the body of Mr. Blow in the coffin.

3. A recruit named William Gordon, arrived from Glasgow, at Beggar's Bush Barracks, on the 24th of June, 1849. It is supposed he brought the contagion of cholera with him, as he took ill of that disease on the 27th, and died on the 28th of June. A child about four years old took cholera in the room the recruit died in: this child died. On the 3rd of July Mrs. Duffy, who was in the same room with the recruit, took cholera, and died on the 4th of July. A servant maid of Mrs. Duffy's, who was staying in the room with her on the 3rd, and attended her during her illness, left the room on that day, and on the 6th took cholera. She was removed from the barracks to the Brunswick-street Cholera Hospital on the 7th. Between the 28th and 3rd July a woman, wife of a soldier of the 2nd or Queen's Own, took cholera and died; she was in the neighbourhood of the recruit Gordon. A child belonging to the 2nd or Queen's Own took cholera in the room the soldier's wife was staying in, and recovered. This account has been furnished to me by Mr. Reid of Mount-street.

4. The Rev. Mr. Disney, Rector of Slane, has sent me the following fact:—"In July a poor beggar-woman came to Slane, and was taken ill just as she entered the town. A man named Thomas Vaghey, who was employed for the purpose of preventing the entry of beggars into the town, raised her from the ground where she was lying, and carried her to a shed, where she died; he got cholera in less than two hours afterwards,

and died ; his sister, who attended him, likewise took the disease, and died the day after. Up to the time this man got the disease from the strange beggar, nothing like cholera existed in Slane."

5. Dr. Beauchamp is my authority for the following instance. A woman about forty-five years of age, living in New-street, went to St. Andrew-street to nurse a child ill of cholera ; the child recovered, but the woman returned home, took ill, and died. Her husband and two of her children contracted the disease, and shared the same fate.

6. Surgeon Leney, of Bray, attended Eliza Sinnott, aged thirty years, on the 16th June. She had gone to Dublin on the previous day, and visited a friend labouring under Asiatic cholera. At 7 o'clock in the evening of the 16th she was seized with cholera, and died at 7 o'clock on the morning of the 17th. Her sister, who attended her, had an attack on the 20th of June, but recovered. There was no other instance of cholera in the town previously to these cases. Surgeon Leney, in a letter written on the 30th April, 1849, says:—" I was of opinion that cholera was not contagious ; but this opinion has been shaken by the following cases which occurred here [Bray] recently. A woman named Catherine Doyle, sixty-six years of age, died on the 21st of April, of cholera. A woman in the neighbourhood, named Mary Neill, forty-two years old, washed the body of the deceased, preparatory to interment, and was taken ill on the morning of the 23rd of April, and died at 4 o'clock on the morning of the 24th. William Neill, her son, a boy eight years old, showed symptoms of the disease at 4 o'clock on the morning of the 24th, and was dead at 1 o'clock, A.M., on the 25th April. His sister, Mary, nineteen years of age, was attacked at 4 o'clock on the morning of the 28th, and died at 8 o'clock in the evening of the same day."

7. I am indebted to Dr. M'Cormac, of Belfast, for the following instance:—"At the beginning of April, 1849, a car-

driver from Lisburn, where cholera then raged, was seized with the disease at Ballinderry, seven miles distant from the former town; he was lying in the street in Ballinderry, until kindly admitted by a relative of his own into her house, and placed in her husband's bed. The driver died, and was duly waked. His kind host and hostess proceeded to occupy the now vacant bed, when first the man took cholera and died; then the woman sickened with the like fatal result; and, lastly, two of their children perished; while the only member of the family left alive was an idiot girl. There had been no case of cholera in Ballinderry before this melancholy occurrence."

8. The Rev. Arthur Hyde, rector of Mohill, states the following very awful instance (in its results) of infection transplanted by means of clothes:—"A poor man and his wife, almost the first sufferers from cholera in this village, died, and were interred so speedily that their friends had not an opportunity of waking their bodies. They came, however, a distance of nine miles, and, taking away the clothes to the residence of the deceased, waked the clothes instead of the bodies. Eleven persons attended the wake, all of whom were seized with cholera, and died after great suffering. Dr. Dukes, our dispensary physician, attended these people, and fully confirms my statement."

9. Dr. Reid of Mount-street has supplied me with the following facts also. "Mrs. Moylan, living at No. 2 or 3 Mellifont-avenue, Kingstown, took cholera about the 3rd July, and recovered. In eight or nine days after this attack, some friends came from England on a visit; one of them, a young lady, took cholera after her arrival, and died; another, an old lady, removed, on the death of the young lady, to a house some four or five doors distant in the same avenue: in a few days after her removal she was attacked with cholera, which proved fatal. On the 10th of July, Miss Macdonough removed from Northumberland-avenue to the house in Mellifont-avenue, where the first-mentioned deaths occurred. On the 12th, two

days after, she took cholera at 8 A.M., and died at 7 P.M. The servants said that the bed-clothes used by the young lady were also used by Miss Macdonough."

10. The subjoined instance of transplantation occurred in the practice of a friend of Dr. Leet's, from whom I have received it. Dr. — visited a young girl stopping at the house of Mr. O'Neill, a respectable tanner in this city. On seeing the young lady, he at once pronounced her to be ill of cholera, and expressed his apprehension that there was but little hope of recovery. Mrs. O'Neill, on learning the character of the young lady's malady, at once removed to Cabra, a healthy suburb at the north side of the city, where her daughter-in-law resided. The physician had scarcely returned home from his visit, when he was sent for to go to Cabra to prescribe for Mrs. O'Neill, who had been attacked with decided cholera, vomiting, purging of rice-water, and symptoms of collapse. She recovered. The servant woman who attended her at Cabra took the disease, and died in the house, as also the woman who was brought in to wash some of the clothes.

11. Dr. Hammerton, of Castletown, Navan, recites several cases, in which there is reason to believe that the disease was propagated by means of the pernicious custom of waking, so pertinaciously adhered to by the Irish peasantry. In his district the wake of a man, who died of cholera, first gave rise to the disease. A man named John Crahan, who, amongst others, attended the wake, was seized with the disease in a very violent manner. In another case, the person who washed the body sickened the same night, and was dead before morning. "Another mode," says Dr. Hammerton, "by which cholera is, I think, propagated in the rural districts, is the following, viz.:—a herd goes to a market-town with his master's cattle, where cholera is raging, returns, and in a day or two is seized with the disease. I have heard of more than one instance of the disease being disseminated in this way."

12. Dr. Hudson, of Navan, mentions two indubitable in-

stances of transplantation in the following letter which I have received from him: "According to your wish, I send you a note of some cases in which the diffusion of cholera seemed to follow from the introduction of a case into a house in the neighbourhood. The first instance was that of a man named Kiernan, who came from a place in which cholera was prevalent, to his brother's house, in a lonely part of the country, he being at the time in the commencing stage of the disease. He died on the following day, and on the day after his death his mother and brother were attacked with the disease. A woman, named Mary Fay, died of cholera in Navan on the 3rd of July. A child, eight years old, who had lived and slept with her up to the day of her death, was removed on that day to a house about a mile from the town, situated in a small hamlet. This child had cholera on the 6th; during her illness she was constantly visited by a woman named Mary Downes, who lived in the adjoining house. This woman sickened on the 12th."

13. For the following fact I am indebted to Drs. Bernard and Wallace, of Charleville, in the county Cork: "A healthy man, living sixteen miles from Limerick, went to that city in March last, when cholera was raging there; he returned home on the same day, and in the course of the evening was seized with diarrhœa, and before he sent for, or indeed could procure medical advice, he fell into collapse, and died of Asiatic cholera. Before he went to Limerick he was in excellent health, and, what is more to the point, so were his mother, sisters, and brothers, whom he found well on his return home. Yet, on the morning succeeding his death, three of the family were attacked, and died of the disease in twenty-four hours." Drs. Bernard and Wallace, who are by no means decided contagionists, in communicating this fact to me, observe:—"We see this fact favours the doctrine of contagion,—since, first, the man was perfectly well until he went to Limerick, where cholera was raging; secondly, since no disease of the kind was

epidemic in his own locality, his family and neighbours being previously in good health ; thirdly, as three members of his own family took the disease and died of it, after his death, from the same cause ; and, lastly, since none of his neighbours living near him contracted the disease, as it is probable they would have done if the atmospheric poison was in the locality at the time."

14. Dr. Trenor has sent me the following case :—" Mrs. D., residing at Montpelier-hill, died of cholera early on the morning of the 17th June. Her daughter was asked to spend the following day in a house within two doors of her mother's residence. One of the children in this house, a boy, four years of age, she caressed and nursed during the day, and on the 18th this boy was attacked with cholera, and had a very narrow escape."

15. Dr. Clarke, of Naas, is my authority for the following very important cases :

" A woman named Allen, wife of a herd living at Sherlockstown, near Sallins, County Kildare, was sent from Dublin the infant child and clothes of a relative of her's who had died of cholera in that city. Two days afterwards she was seized with cholera and died ; this was the only case in that locality. A man and his wife, named Finnemore, living near the village of Rathmore, County Kildare, went to Dublin to see the Queen last August. The evening of the day on which they returned the wife was seized with cholera, and died next morning. The succeeding night the husband was attacked, and died the following morning. A woman named Johnson went to the house to wash the clothes of the deceased ; in two days she also fell a victim. The Finnemores were of independent circumstances, and lived in a very neat cottage, isolated from any other houses ; the locality around was remarkably healthy : and no other case of cholera occurred in that district. A carman named Connor drove to Dublin from Naas last August ; on his return he was seized with cholera at Rathcoole, and died after his arrival at Naas."

The foregoing list of instances in which cholera was carried from one locality to another, where no such disease had previously existed, and where, notwithstanding the spread of the disease was from an imported source, other individuals were affected,—this list, I say, exhibits almost indubitable proofs of the contagious nature of cholera; and the facts therein recorded cannot, in the estimation of any candid mind, lead to any other conclusion than that which I have advocated.

I now proceed to another order of cases, in which the diffusion of cholera took place under circumstances which, if not demonstrative of its contagiousness, at least render that quality of the disease highly probable, if we rest it upon these facts alone, but, when coupled with the preceding, leave no doubt upon the subject.

Dr. Wharton, of York-street, has communicated the following:—"Mrs. O'N., of Camden-street, died of cholera on the 14th July, 1849. Two days after her decease, her servant, Eliza O'Brien, who constantly attended her during her illness, sickened, and was saved with difficulty. A young woman named Ellen M'Loughlin visited this Eliza O'Brien more than once, contracted the disease, and died on the 17th July. On the 19th July Mrs. O'N. (the deceased lady's daughter), caught the disease, and with difficulty recovered."

Dr. Trenor, of Mount-street, stated to me, "that he saw a case in Sackville-street, in company with the late Mr. Carmichael. The sufferer, a lady, had died of cholera on Sunday, and before the body was placed in the coffin on Monday, the nurse took a little child (three years old) in her arms into the room, and placed her over the body to see it for the last time. At 5 o'clock on the same day the child was attacked with cholera in a very severe form, but ultimately recovered.

A remarkable proof of the contagiousness of cholera was exhibited in the family of Mr. Murphy, a wealthy salesmaster.

Mr. Murphy lived in a beautiful villa near Stillorgan, and, notwithstanding that he had amassed a large fortune, at-

tracted by the force of habit, he often frequented the scenes of his former labours, a day hardly passing that he did not attend at Smithfield.

Mr. Murphy was seized with cholera, which proved fatal; his eldest son was subsequently attacked, and likewise died; one of his daughters also fell a victim, and four of his domestics and attendants were carried off by the same fatal disease.

Mr. Murphy's residence was situated in an extremely healthy, elevated, and well-drained part of the country, surrounded by an extensive demesne; and it is remarkable that, of all the inmates of his house, he should have been the first that succumbed, being the person whose habits most exposed him to contact with the infected.

Mr. Henry Halahan, of Stephen's-green, has furnished me with the following examples:

Catherine Higgins, aged 70, had been living in the country all her life until lately, when she was in the habit of coming to Dublin to take care of her daughter's children. Her son-in-law being ill of cholera, she was sent for, and shortly arrived at his house, fresh from the country. Soon after her arrival he died, and on the night following, she, with her daughter and two grand-children, slept in the same bed in which the man died, taking no precaution but the removal of the sheets. In the night she felt herself unwell, complaining of purging, vomiting, &c.; everything was done to save her, but with no effect, as she soon sank into collapse, which terminated fatally at 7 o'clock the same evening.

The late Surgeon Rooney was seized with cholera on Monday, August 19th, and died on the 26th. On the 25th, the day before his death, his daughter took ill, and sank under the disease the same evening; his nephew was attacked on the 28th August, and died the same evening; a grand-daughter took the malady on the day of his death, 26th August, but recovered; and on the 30th his son-in-law was attacked with diarrhœa, and had a narrow escape.

This case is the more valuable, as Dr. Rooney's house was airy and well ventilated, and situated in one of the best drained and healthiest suburbs, viz., Mountpleasant-square.

Dr. Leet has furnished the following interesting and remarkable instance of cholera produced by exhalation from an open grave:

"Dr. ———, with his wife and a friend, were on a visit at the Botanic Gardens, Glasnevin, which adjoin the well-known burial-ground at that place. Coming from the gardens they were induced, from curiosity, to walk through the graveyard, in the course of which they observed several uncovered graves, containing some coffins recently deposited, and from one of them they were struck with a very offensive smell; a cholera corpse had been interred in it. Beyond the smell there was nothing unusual felt by any of the party, until their return home, when all were immediately attacked with symptoms of cholera. With Mrs. ———, indeed, I might say, no symptoms at all preceded the collapse, which seized her at 1 o'clock A. M., and terminated fatally at 6 P. M. the same evening. The other two were saved with much difficulty.

Mr. Vance, of 63, Upper Dorset-street, died of cholera, on Monday, 25th June. His sister-in-law, Mrs. Johnson, resident in the same house, sickened on the 28th, and died on the 29th; her mother removed to Florinda-place, and was there seized with the disease on the 1st July.

The boy who was employed to carry down Mr. Vance's bed was also attacked with cholera.

Mrs. Shea died at the Crescent, near Clontarf, of cholera, on the 7th June. On Sunday, the 10th, the Rev. Mr. Tyrrell came up from Kinnealy, where there was no cholera, and breakfasted and dined at the same house in the Crescent where Mrs. Shea died. On the following Tuesday he was seized with cholera, which terminated fatally on the next day, the 13th, at 2 P. M.

Miss ———, sister to the deceased Mrs. Shea, came up from

the County Louth to visit her, and saw her when dead, she remained in the house, sickened at 3 A. M. on the 13th, and died same day at 2 P. M.

Mr. Drake, apothecary, Rathmines-road, attended Mr. and Mrs. Sherry, both of whom died of cholera. During their illness he was most assiduous in his endeavours to relieve them. A few days after their death he was attacked with premonitory diarrhœa, on the 18th of June, but arrested its further continuance by means of acetate of lead and opium. He thought himself well during the week, and regularly attended to his business, but felt all the time a great thirst, though free from either diarrhœa or sickness of stomach. On Sunday, the 24th, he was seized with a sudden attack of cramps and collapse, with scarcely any diarrhœa or vomiting, and died in a few hours.

The preceding facts indicate so clearly the contagious nature of cholera, and contradict so strongly the official announcement of the Central Board of Health, that I am persuaded its members, Sir Philip Crampton, Sir Henry Marsh, and Doctor Corrigan, must now regret having lent the no small weight of their names and of their authority to a Circular containing the following passage:

“ The Commissioners of Health are anxious to impress upon all persons the important difference that exists between cholera and fever, with respect to the mode of propagation of these epidemic diseases. Fever, it is well known, is highly contagious, or easily propagated from one individual to another; while all experience shows that cholera is rarely, if ever, contagious; consequently, the separation of the sick from the healthy—a measure so essential in checking the spread of fever—is not required in cholera; and the friends and relatives of persons attacked with cholera may be under no apprehension of catching the disease, and need not be deterred from affording to the sick, in their own dwellings, every needful assistance and attention. The Commissioners of Health, after

mature consideration, do not advise that cholera should be met by an extended system of hospital accommodation, such as is needful in epidemics of fever, but recommend, in preference, a general system of prompt and efficient dispensary relief. The non-contagious character of cholera fortunately removes all objection to the receiving of persons suffering under the disease into the ordinary hospitals of the country, whether county infirmaries or fever hospitals, all of which the Commissioners of Health advise should be open and in readiness to receive destitute patients in cholera."

The advice of the Commissioners thus given, after mature consideration, no doubt influenced many friends and relatives who now no longer need assistance and attention.

The recommendation of the Commissioners, that the ordinary hospitals of the country should be opened for the reception of cholera patients, has led to consequences not less unfortunate to the other inmates of these hospitals, among whom the disease spread, notwithstanding the above official predictions. Thus, in the fever hospital of Tulla many caught the disease, and in Ennis the following letters sufficiently attest the same melancholy result:

"At a meeting of the Sanitary Committee yesterday evening, the following letter was read from Dr. Whitestone:

“*To the Sanitary Committee.*

“GENTLEMEN,—As one of the physicians at present in attendance at the fever hospital, a part of which has been allocated for the reception of cholera patients, I feel it my duty to call your attention to the alarming fact, that several patients in the hospital have been already attacked with cholera; and to inform you that, in my opinion, many more will be similarly affected before long. Under these circumstances, I would strongly recommend you immediately to take steps to prevent the fatal consequences which must result from a continuance

of the practice of receiving others than cholera patients into the hospital for the present.

“ ‘ I have the honour to be, Gentlemen,

“ ‘ Your obedient Servant,

“ ‘ FRANCIS WHITESTONE,

“ ‘ Surgeon.

“ ‘ *Bindon-street, March 25, 1849.*”

“ The following statement on the subject was also subsequently submitted to the Board by Dr. O'Brien:

“ ‘ In consequence of the very rapid and fatal spread of cholera amongst the patients and others in the fever hospital, I beg to suggest to the Sanitary Committee the imperative and urgent necessity of providing *separate* accommodation for the persons labouring under both diseases. This can be done either by stopping the admission of cholera patients into the fever hospital, and providing accommodation for them elsewhere, or by removing the fever patients to another establishment.

“ ‘ GEORGE O'BRIEN,

“ ‘ *One of the Physicians to the Fever Hospital.*

“ ‘ *Ennis, March 25, 1849.*”

The danger resulting from the indiscriminate admission of cholera patients into hospitals intended for the reception of persons suffering under other complaints, is further proved by the following extracts from the Medical Gazette of April 6, 1849; and, from inquiries I subsequently made, I have no reason to doubt the perfect accuracy of the statement. The fever hospital referred to is situated in the town of Lisburn, a very clean and healthy place, and more than usually free from the nuisances, incidental to towns. Lisburn is twelve miles distant from Belfast.

“ From its first appearance, on the 24th January, till now (March 29), 223 cases have been reported: of these, 125 recovered, 75 died, and 23 remain under treatment. For three

weeks after the first two or three cases, the disease made little progress; but suddenly after that it broke out with fearful malignity, and, owing to the poor not feeling the importance of early attention to its premonitory symptoms, and not thinking it cholera until they were in collapse, nearly all the first cases proved fatal. The Board of Health issued placards warning the public of the approach of the pestilence; directing what to use and what to avoid; also stating that no one need be afraid to afford every assistance in their power to their neighbours, as the disease was not contagious; and also recommending the treatment of the affected in their own houses, or in hospitals among other patients. To carry out the latter part of their recommendation, many of the cholera cases were removed to the workhouse fever hospital, where cholera had not previously existed, but in which it has from that period till now proved highly fatal to the fever patients, the greater number of whom have been seized, either prior to or during convalescence, and, with one exception, all carried off. A few weeks ago, four patients, members of one family, labouring under maculated typhus fever, were admitted into the fever hospital: three were seized with cholera, and died. Six of another family were received: two have died of cholera, and the remainder still exposed will perhaps sink under a disease which did not exist in the locality from which they came."

I have carefully inquired among my brethren in Dublin, respecting their opinions as to the amount of danger which medical men are exposed to in their attendance on cholera patients; and they mostly concur in representing the result of their experience to be, that a medical man, who is much employed about such patients, seldom escapes an attack. It is true, as a body, we have much reason to be thankful, that in Dublin not more than four or five deaths took place among the medical profession. But in explanation of this comparatively light mortality, it is necessary to observe that it was altogether owing to the knowledge medical men have of the

premonitory symptoms which denote the very commencement of cholera, and to the care they take, instantly, to meet such symptoms with appropriate remedies. I, myself, was twice attacked with decided premonitory symptoms. I felt myself ailing, fatigued, and annoyed by flatulence, rumbling, and dyspepsia. These symptoms denoted the preparatory stage of incubation, and were followed by premonitory diarrhœa, and in each case I had some difficulty in arresting its progress.

The same symptoms, with a like fortunate result, were observed by a great number of physicians, surgeons, and apothecaries in this city.

It is quite true that the greatest care will not always be sufficient to preserve life, for in some cases the attack of cholera is so sudden and unexpected as to leave no room for either precaution or treatment. Such instances are, however, in reality, very rare, although the number of persons reported to be thus carried off is considerable, for a more accurate investigation will generally lead to the discovery of premonitory diarrhœa, often so slight as scarcely to have attracted the attention of the patient.

While on the subject of cholera hospitals, it is necessary to observe, that the officers appointed by the Board of Guardians in Dublin, for the relief of the poor, were, during the whole of the epidemic, extremely active, and used every means to arrest its progress, which the funds at their disposal allowed. Among the rest, they rented private houses in various parts of the town, which were fitted up for cholera hospitals. It is worthy of notice, that the poor did not avail themselves of these establishments at all in the same proportion as in 1832 and 1834, when large buildings, such as the Grangegorman Penitentiary, and the Dépôt in Townsend-street, were taken and prepared for the reception of cholera patients. In the furnishing of these buildings, considerable sums of money were expended by the Government, which gave the hospitals the appearance of being well and comfortably prepared. This had

an evident effect upon the minds of the poor, and won their confidence to such a degree, that they flocked in great numbers to these establishments for relief. This was by no means the case in the epidemic of 1849, during which it was extremely difficult to get people to bring their friends suffering from the disease to hospital. These places, which had not externally a very attractive appearance, consequently fell into disfavour in the minds of the people, who unwisely preferred almost certain death at home, in their own crowded and miserable rooms, to the chance of being cured in hospital. I knew myself an instance, in which several persons inhabited one small apartment near such an hospital, and who died in succession of cholera, each individual being apparently more alarmed at the prospect of a cholera hospital than even death itself.

It is worthy of remark, that some of the districts in Dublin which suffered most during the visitation of 1832, escaped almost unscathed in 1849. Church-street affords an example of this, and is quite a puzzle to those who account for the disease by lowness of situation, bad sewerage, &c., &c.; for in all these respects Church-street and its vicinity deserve now, as well as then, an unenviable notoriety. The village of Castleknock is situated three miles from Dublin, in an elevated position, well drained, and built upon a dry limestone soil,—this village was unvisited by cholera in 1832 and 1834, but lost half its inhabitants in 1849. Such an occurrence, though explicable on the supposition of contagion having been introduced during one epidemic, but not during the others, cannot be accounted for on the want of drainage and sewerage hypothesis. It has been asserted by the Board of Health in England, that cholera affects certain unhealthy localities only, and that such places suffered most severely from its ravages, as were either badly drained, had narrow streets, or contained a pauper and consequently an ill-fed population. The course which the epidemic took on the occasion of its visit in 1849, presents so many

contradictions to this, that we are compelled to doubt both the accuracy of the assertion, and the correctness of the numerous conclusions deduced from it.

Thus we find that some of the healthiest localities in Ireland were sadly affected during the existence of the epidemic at this period; for instance, Parsonstown,—than which no town in Ireland is better drained, more cleanly, or more carefully sewered,—suffered severely, and yet its population, generally speaking, are much more comfortable than is usually found in this country, and the streets have an air of neatness and cheerfulness which reflects the highest credit upon the noble and justly celebrated lord of the soil, the Earl of Rosse. In truth, if the theory of the English and Irish Boards of Health was correct, a visitor to Parsonstown, relying upon such an hypothesis, might, without hesitation, calculate upon its complete freedom from the scourge of cholera. But, as I have already showed, such an anticipation would have been anything but verified in the result; for the inhabitants of this very town fell victims to the disease in a far greater proportion than other places in Ireland, which, according to the Boards I have mentioned, might have been expected to suffer to a greater extent, from the fact of their containing all the causes and elements supposed to be calculated to generate and nourish this epidemic.

The village of Bray, in the county of Wicklow, affords an example equally strong, being interestingly situated on the side of a granite mountain, and its single street extending far up the hill. Its position is celebrated as being particularly healthy, and is much resorted to by invalids from Dublin. Here, at all events, no want of proper drainage could possibly exist, and here there is no numerous pauper and filthy population; yet this village was awfully scourged by the cholera in 1849, while adjacent villages, such as Enniskerry, Loughlinstown, and Cabinteely, situated in lower, more confined, and much moister positions, escaped nearly altogether.

Carlow is an extremely well-situated town, and built upon a very dry soil, the same may be said of Bagnalstown; and yet the respective populations of these places were decimated in 1849 by cholera, while many towns and villages notoriously impoverished and unhealthy escaped during the existence of the same epidemic.

My friends, Doctors Farr and Sim, have argued most ingeniously upon the facts they have observed in England; but I think, that the foregoing instances prove that they very incautiously argued upon these facts, and too hastily ventured upon generalization, which a more extended observation completely refutes.

In a former paper I have shown, that if we take a world-wide view of the progress of cholera, we shall find that its prevalence is entirely unconnected with any physical peculiarities either of soil, temperature, climate, water, air, or food; and certainly the history of the late epidemic verifies the conclusions I there drew. The history of the disease in Dublin is alone sufficient to dispose of the favourite conclusions of those who connect the usual sanitary conditions of towns and countries with the appearance of the cholera. Of these I have already spoken. I may now add, that there was very little cholera in Patrick-street and the adjoining parts, although these districts are the most densely inhabited, the worst drained, and the most filthy to be found in the whole city.

In a letter received from Dr. Kelly of Drogheda, he gives the following particulars relative to the village of Duleek, which I think are well calculated to elucidate the subject under discussion:

“Duleek is distant about four miles from Drogheda, situated in low, swampy ground, and contains 1600 inhabitants of the very lowest class, who are without employment nearly all the year, except during the harvest season, and are consequently without food, fire, or clothing, and live in a most shocking state of filth and wretchedness; nevertheless, but two cases of cholera

occurred during the entire period of the disease. The foregoing statement has impressed me with the opinion that cholera is a disease *sui generis*, and totally uninfluenced by such agents."

The villages of Sallynoggin, near Kingstown, six miles from Dublin, and Goatstown, near Dundrum, four miles from Dublin, have both suffered much from cholera. In the former more than fifty individuals died, being, I believe, about one-fourth of the entire population. These villages are situated in most healthy localities, at a considerable elevation, and built upon a very dry soil. In neither does there appear to be the slightest want of drainage, nor the existence of any of those nuisances to which public opinion, misdirected by Boards of Health, is accustomed to attribute the origin of cholera. Sallynoggin in particular, occupying the declivity of a hill, the subjacent rock of which is granite, suffers rather from a want than a superabundance of water; and at the time of the invasion of cholera, the soil was parched by a long-continued drought.

The following letter, from my kinsman and former pupil, Dr. Graves of Rush, bears so directly on the question at issue between me and the central Board of Health of Ireland, that I have thought it well to print it *in extenso*:

"As you have ever been the advocate of the contagiousness of cholera, and as I have had much opportunity of observing the progress of this disease, and its mode of propagation, I am sure that any facts bearing upon this question will be gladly received by you. I purpose, therefore, to let you have a brief history of what would seem to me to bear conclusive evidence, that cholera, once it has taken up its abode in a locality, is both infectious and contagious.

"You are, doubtless, aware that Rush (the seat of my labours) suffered severely from the late epidemic, 824 individuals of all ages and sexes having been attacked, and 176 having died, and this out of a population not exceeding 2500. The village of Rush extends for about one mile along the coast, east

and west, being little elevated above the sea, the soil sandy, and for the most part dry. The population may be divided into two classes, one half deriving a scanty and precarious subsistence by fishing; the other half an agricultural class of labourers and small landholders. The fishing class is confessedly the poorest, and for the most part live in wretched and filthy dwellings in the east end of the village. Indeed I may here remark that the houses in Rush are of the worst description, constructed without any regard to ventilation, and seldom containing more than two small compartments, in which are congregated often as many as eight, and even, in some instances, ten individuals. There being no upper story, they all live on the ground floor, which is scooped out of the sand, and then lightly covered over with yellow clay; thus in rainy seasons becoming a fertile source of disease, from its extreme dampness. From this sketch of our village, you will not wonder that such numbers were attacked, more especially when I tell you that, when the disease arrived at Rush, it found us unprovided with an hospital; thus, in the houses of the poor, rendering it impossible to separate the sick from the healthy.

“Before the cholera reached us, it prevailed at Swords, about six miles distant, which gave us time to make what were supposed to be the necessary preparations for its visitation. White-washing and cleansing were diligently had recourse to; all nuisances, such as dunghills and stagnant pools, which might be considered as dangerous to the public health, were removed; but, as I have just stated, we were found wanting in the greatest *essential*,—namely, good hospital accommodation; this, by a *false economy*, we were prevented from enjoying until the disease should actually appear amongst us, which it did on the 14th of August, 1849, in a very aggravated form, and in the most airy and cleanly part of the village. The first case was that of a small landholder, and the village nailer, a man in comfortable circumstances, residing about the middle of the main street; he was attacked on his way from the Dublin mar-

ket, and died in about eight hours from the first invasion of the disease. Six days elapsed without any other case occurring, when suddenly this man's wife, who attended him most assiduously, was carried off, after a few hours' illness. One of their children was the next case; it recovered with great difficulty. The fourth case was that of a neighbouring woman who volunteered her services as nursetender to this family; she narrowly escaped. A circumstance of rather a remarkable nature now occurred in connexion with the fifth case, a boy of sixteen years of age. This nursetender, at the period when she offered her services to the nailer's family, whose house was exactly opposite the one in which this boy lived, was engaged attending upon him in typhus fever, from which he was then slowly convalescing, so that, until she was herself struck down, her attention was divided between him and her cholera patients. This boy, who was still confined to his bed, was attacked with cholera, and from his weakened state easily fell a victim to it. Now, whether this nursetender conveyed the contagion to him in her clothes, I will not take upon me to decide; but the facts would seem to favour such a view. A brother of this boy next fell a victim; so that up to this period, that is, ten days from the date of its first appearance, we had the disease confined to two houses in close proximity, six of the inmates having been attacked. The disease now began to extend rapidly westward, appearing in several localities almost at the same time, seldom leaving a house without attacking several of the inhabitants, and, in some instances, sweeping off whole families. When it appeared in a locality it never left it without attacking almost every house in its immediate neighbourhood; and this without reference to drainage, cleanliness, or ventilation: clean houses in the vicinity of dirty ones suffered in like manner. In fact, so evident had the signs of contagion now become, even to *non-medical* minds, that friends and relatives fled from their plague-stricken houses, leaving the sick and dying to the mercy of any one who might have sufficient courage and cha-

city to administer to them in their hour of need. From the 14th of August to the 10th of September, the disease continued to spread westward from the house first attacked, no case up to this time having occurred east of it, though in the east end of the village reside the fishing class, remarkable for their poverty and want of cleanliness,—a class that, reasoning *a priori*, you would say was most likely to suffer from an epidemic such as cholera. On this day, the 10th, a woman remarkable for her intemperate habits was seized with the disease, and died; her husband next fell a victim, and from this time it continued to progress eastward, as it did at first westward, but not with the same violence. Cases became more amenable to treatment; and from the fact of our hospital being now available, and separation of the sick from the healthy being had recourse to speedily, the rapid progress of the disease in families was checked. Of 105 families, some one member of which was admitted into hospital, forty escaped with only the admitted member being attacked, and in these instances the separation was had recourse to immediately. Amongst the remaining sixty-five the disease continued to spread, notwithstanding the separation, but in many of these separation was not resorted to immediately. Another remarkable instance, in proof of the contagious nature of cholera, occurred at the Balrothery Union Workhouse, about four miles distant from Rush. No case of cholera had occurred in the house, nor was the disease prevailing in the vicinity, when some cases were admitted into the workhouse hospital from the district of Swords, which was six miles off. In a few days after cholera broke out amongst the paupers with violence; owing, however, to the judicious arrangements of Doctor Adrian, the house physician, in cutting off all communication between the paupers and the cholera hospital, the disease soon disappeared. Of four men whom we had employed to bury the dead, three were attacked with cholera, two of them recovering with difficulty. Of six nurses employed, four contracted the disease, and two died.

"Let me now recapitulate the facts which have induced me to believe that cholera is contagious:

"1st, From its progressing by attacking in detail those who had been in attendance upon or in close proximity to the diseased. 2ndly, From its spreading from house to house in any locality where it appeared, rarely entering a house without attacking several of the inmates, the mortality being greatest when numbers were congregated together in small and ill-ventilated abodes. 3rdly, From the negative information furnished by the fact of the disease having attacked only one member of forty families, where separation was had recourse to early; such a result, in families where no separation took place, being the exception, not the rule. Lastly, from the fact of cholera having made its appearance at the workhouse immediately after the admission of cholera patients from a distant part of the Union, no case having previously occurred in the house or its vicinity."

In a former paper I dwelt upon the proof of the contagiousness of cholera, derived from the fact of its spreading so often among the crew and passengers of ships, in which the disease once appeared. Since that paper was published several instances of this nature have occurred, and that under circumstances calculated to negative the various hypotheses accounting for the spread of the disease advocated by many writers, and by the Boards of Health in London and Dublin. It is well known that the packet ships, which ply between Liverpool and New York, and which are usually called Liners, are remarkable for the excellent arrangement of everything on board. In such vessels it would be impossible for cholera to commit ravages to any extent, if the disease be produced solely by emanations from sewers, or by vitiated states of atmosphere arising from want of ventilation and overcrowding.

In these ships such circumstances are never allowed to exist; and consequently cholera, if the usual hypothesis be correct, should be extremely rare among the inmates. We

find it, nevertheless, announced in the London Medical Gazette of September 7, 1849, that the packet ship "Oxford," arrived at New York, lost twenty-one by the disease; and the packet ship "Sheridan," thirty-one. Such an occurrence is easily explained on the principle of contagion, but not by any of the hypotheses which attribute the dissemination of the disease either to impurity of water, malarious emanations, atmospheric changes, &c. &c.

Subjoined are instances of deaths from cholera occurring on board the regular steam packets plying between Liverpool and New York, all of which are vessels remarkable for their superior accommodation and cleanliness, and for the possession of every convenience which can insure to the passengers by them the enjoyment of health and comfort.

The first is that of the "Columbus," which arrived at New York on the 8th October, 1849, from Liverpool, having had no less than thirty-six deaths among the passengers from cholera during the voyage.

The Evening Mail of the 27th October, 1849, furnishes me with others, and mentions that the deaths of late on board these vessels have considerably increased. The last packet which sailed previously to the above date had nineteen deaths, and the last but one fifteen deaths, all from cholera.

I am glad to find that Dr. James Copland, the author of the celebrated Dictionary of Practical Medicine, entirely agrees with me, both as to the contagiousness of cholera, and the inadequacy of the measures adopted by the Boards of Health with the view of arresting its progress. In a letter addressed to the Editor of the Medical Gazette, and published in the number of that periodical for September 28, 1849, the following observations occur:—"The Board of Health, which was formed in 1831, consisted of three very experienced physicians,—of two who had investigated very closely the nature of the choleric pestilence, the third had had the greatest experience of any man living in other pestilences. This Board wisely

endeavoured to prevent the spread of choleric pestilence, by removing those of the poor who were attacked to cholera hospitals, in order that they might not be the sources of infection in their several residences and localities, and by other means calculated to prevent infectious emanations from the sick. The members of this Board, experienced and practical physicians, acted on the conviction of the infectious and specific nature of choleric pestilence, and did all they could to limit its spread by acting on this conviction. The results were, 1st, that the spread of the pestilence was then comparatively limited; 2nd, that many populous towns and districts escaped altogether; and, 3rd, that the disease entirely disappeared for nearly seventeen years. The present so-called, or popularly called Board of Health, but legally denominated Board of Works (see the Earl of Carlisle's letter), take opposite views of the nature of the disease, act accordingly, and allow a malady, which judicious measures might have arrested altogether at an early stage of its diffusion, to become destructive to an extent far beyond the history of modern pestilence, and, moreover, recklessly run the risk of domiciliating the disease in this country, as it has been in India since 1817."

The manner in which the cholera increased immediately after the Queen's visit to Dublin was very remarkable, and, in my mind, strongly corroborative of my opinion respecting its contagious nature. Indeed, upon observing the immense crowds that poured into the city from all parts of Ireland, for the purpose of witnessing Her Majesty's entry into the Irish metropolis, I mentioned to many of my friends the fears I entertained, that the disease would be more widely spread, and considerably aggravated, during each day of Her Majesty's sojourn. These fears were much heightened, when I beheld the crowds of persons, of all classes, who sallied forth—too many of them from abodes of misery—to view the magnificent and brilliant appearance of the city on the evening of its illumination, and who thronged every place or thoroughfare, both

in the city, Kingstown, and elsewhere, in which Her Majesty was expected to appear. Relatives of persons sick of cholera, those convalescent from premonitory diarrhoea, cholera porters, nursetenders, and others connected with the hospitals, unable to restrain their curiosity, were everywhere mixed up, and brought into the closest contact with those who had been previously healthy. At Kingstown, the attraction of the royal squadron brought visitors from all quarters; and as cholera had previously existed both in Kingstown and the adjacent villages, the same causes as in the city were likely to give rise to a more extensive dissemination of the disease. The fears expressed were but too soon realized, for the disease spread far and wide, in Dublin, Kingstown, and in many districts of the country before unaffected, in the week following Her Majesty's embarkation. As a proof of the danger of bringing crowds together during the existence of a contagious disease, I need only refer to the report of the plague of Milan in 1630, translated and abridged by Michael Donovan, Esq., from the Italian of Manzoni, and published in this Journal in August, 1849(*a*).

It is worthy of being recorded, that a terrific thunder storm occurred in Dublin, on Saturday, the 1st of September, 1849. It commenced about 3 o'clock in the afternoon; very frequent and violent electric explosions were followed by torrents of rain, after which the sky cleared about 5 o'clock in the evening. But at 7 o'clock it again became overcast, and a continued deluge of rain poured down from that hour until midnight, during which the rapid succession of the thunder-peals, together with the appalling flashing of the lightning, fearfully recalled to the minds of those who had resided within the tropics, the recollection of one of the awful convulsions of nature usual in those regions. I looked forward with much interest to the effect of this storm on the state of the public health, and was anxious to see whether the common idea, that

such an event would purify the atmosphere, and diminish the intensity of the epidemic, would in this instance be verified. But no such desired result followed; for the cholera rapidly increased after that day, and reached its maximum in the following week.

In concluding this paper I beg leave to observe, that my arguments and facts are chiefly applicable to countries where the cholera does not exist as a permanent endemic disease, and are not of the same force when the question relates to parts of the globe, such as Hindostan, where the disease originated, and is constantly present. The progress of cholera in India presents a much more complicated problem, in whose solution this important element ought never be lost sight of(a).

(a) It will be observed that in the foregoing pages I have derived my arguments altogether from facts that occurred in Ireland during the late epidemic; in a future paper I purpose bringing forward additional proofs derived from its dissemination throughout Great Britain and other parts of the world; but I cannot forbear at present from quoting the following apposite remarks which I have just met with, in a paper by Dr. Clark on the cholera as it appeared in Newark, New Jersey, and with which he concludes his observations: "Let us look at our experience in relation to the Alms House. July 15th, 1832, Mrs. M'Laughlin, being attacked with cholera, was removed to the Alms House, in which no symptoms of the disease had appeared. July 16th she died; also her husband, who the same day had been removed, apparently well, from the infected house. On the 19th the disease attacked the inmates with its usual virulence, and deaths followed for some weeks. Overlooking or forgetting that sad experience, or, probably, for the want of a 'Board of Health,' whose duty it would have been to remember a fact of such importance, on the 16th of July, 1849, a man was found upon the road between Newark and New York, while in an advanced stage of cholera, and taken to the Alms House. The result was, of course, the same as if a match had been thrown into a powder mill, or a flaming firebrand placed among a heap of combustibles. The infection took, and thirty-eight deaths followed, including the worthy superintendent. Surely those who maintain that typhus fever is contagious must also put cholera in the same category." —*New York Journal of Medicine*, March, 1850.