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PROOFS
OF
THE CONTAGION
OF
MALIGNANT CHOLERA.

By D. M. MOIR, SURGEON,

AUTHOR OF "THE ANCIENT HISTORY OF MEDICINE,"

"PRACTICAL OBSERVATIONS ON MALIGNANT

CHOLERA," &c. &c.

WILLIAM BLACKWOOD, EDINBURGH; AND
T. CADELL, STRAND, LONDON.

M.DCCC.XXXII.

EDINBURGH:
PRINTED BY BALLANTYNE AND COMPANY,
PAUL'S WORK, CANONGATE.

TO THE
RIGHT HON. THE LORD PROVOST,

CHAIRMAN,

AND TO

THE GENTLEMEN

CONSTITUTING THE

BOARD OF HEALTH, EDINBURGH,

THE FOLLOWING PAGES ARE

INSCRIBED, BY

THEIR OBEDIENT HUMBLE SERVANT,

THE AUTHOR.

BRIDGE STREET, MUSSELBURGH,

9TH APRIL, 1832.

INTRODUCTORY REMARKS.

NOTWITHSTANDING the dogged and clamorous opposition of a knot of Anti-contagionists, the general intelligence of the medical profession, and the great bulk of the community, have unequivocally declared for the communicability of Malignant Cholera. On this, as on almost every subject touching public welfare, the common sense of mankind has arrayed itself on the right side ; and, as *exceptio probat regulam*, the opinions and hypotheses of a few speculative and ingenious individuals being set in opposition to general conviction, have only tended, by exciting a more severe scrutiny of the question, to remove it more completely beyond the pale of doubt.

That Malignant Cholera is a disease hitherto unknown in, and new to, this country, and that it propagates itself by some means or other from one place to another, are facts which even an Anti-contagionist will scarcely dispute, however puzzled he may be to account for either the one position or the other ; as also, that it selects its victims, not from among the hale and robust, but the nervous and debilitated. Yet it has been attempted to bring forward even this

latter quality of the disease, which is not a peculiarity, but one shared with typhus and many others, as a proof of its anti-contagious nature ; and some zealots, quite overlooking the circumstance, that with themselves the predisposing causes might be entirely absent, have gone the laughable length of lying for hours under the bed-clothes of the infected. Where, pray, is the disease, that, in the strictest sense of the term, is *absolutely* infectious ? The conclusion seems to have been forgotten, that if all persons were in all circumstances susceptible of the contagion of this, or of any other disease, the whole human race must have long ago been annihilated.

None, we dare say, whatever may once have been the case, are now so hardy as to maintain the incommunicability of small-pox, measles, or typhus ; yet it is a matter of every day observation, that, even after these diseases have shown themselves in the bosom of large families, not only do many of the members seem insusceptible of their contagion, but also that, by having recourse to precautionary means, their progress can, in a great majority of instances, be arrested with the individual first attacked. But who would dream of affirming of these diseases, as has been done by several, who do all but deny the communicability of Malignant Cholera, that they are not *necessarily contagious* ? This is about as conclusive as saying that they are not necessarily fatal ; and equally valuable as a medical aphorism.

The plain fact, however, is, that confirmations of the virulently contagious nature of Malignant Cho-

lera, are so continually crossing the path of those who deny it such an attribute, that, in spite of their wilful scepticism, they are ever and anon driven to the admission of personal communication. What, then, are the circumstances creating this particular necessity? None—that ever I have been able to glean from the conversation or writings of the advocates of non-contagion, but filth, extreme nervous susceptibility from intemperance or other causes, and local malarious influence. Admitting such an assumption for a moment, although it is entirely fantastical, did it never occur to the advocates of these doctrines, that the question immediately arises—Why, if no specific contagion is allowed to Malignant Cholera, did the same degrees of dirt, nervous exhaustion, and local malarious influence, in former times and seasons, not create and propagate the same disease? and what makes them do so now?

But it seems to have been unfortunately too much overlooked, that the question of the contagion of Malignant Cholera is not one of mere medical speculation and curiosity;—it is one involving the welfare of this, and all succeeding generations; and is, more especially at the present time, when many parts of the United Kingdom remain still uninfected, of the greatest national importance. To prove it an epidemic disease—one nearly entirely dependent on general atmospherical or terrestrial causes,—would be to place it at once almost beyond the reach of human control; and is the most melancholy and hopeless view of the subject which can be taken. Whereas,

if it can be demonstrated, so far as the evidence of medical facts may be said to admit of demonstration, that it is a contagion, propagated solely by human intercourse, we have the means in our own hands, under Divine Providence, of essentially mitigating its ravages, checking its progress, and, perhaps, eventually of crushing its existence altogether.

Let me be pardoned, then, a word of expostulation with those, who, without due consideration, it is to be feared, of the serious and awful responsibility which they are incurring, have adventured opinions, speculations, and conjectures on the subject, suited entirely to subvert, in the vulgar mind, every means undertaken in duty and benevolence for the public safety. When we consider what has been said and written, and is still being written and said, by too many professional men on this agitated subject, it is no matter of wonder and surprise, that general confidence in the healing art should have been staggered, and the darkest, although the most absurd and unfounded surmises, propagated to the discredit of its cultivators. Medicine, abstractedly considered, is one of the noblest occupations which can engage the attention of humanity; and if it is doomed, in this country, to submit to degradation, let it be remembered, that the mischief has been caused, not by the peculiar nature of the art, but by the misconduct of its professors. Hitherto the cultivators of medical science have been here estimated as they ought, because they deserved to be so estimated; Dr Solomon has sunk, while Dr Baillie has ascended; and the

satire of Moliere against his countrymen, the French, would have lost nearly all its causticity, had it not been based on the exposure of quackeries, which the every-day observation of all tended to corroborate as being deserved.

How, then, is it possible for us to defend the claim which medicine assumes to the dignity of a science,—a definition which pre-supposes fixed principles,—when we find, that, with an inconsistency altogether unaccountable, each town and village in which Malignant Cholera has appeared, sends forth, *seriatim*, a manifesto of jarring and discrepant opinions regarding its origin, causes, nature, propagation, and treatment; and sometimes in a tone of inconsiderateness and heartless levity, which cannot fail to engender feelings of mortification in the bosoms of the well-disposed and reflective? What to one appears black, seems to another white; the arithmetic of a third makes two and two five; while a fourth, like Mr Locke's blind man, compares scarlet cloth to the sound of a trumpet. There seems to be no common medium of observation—no acknowledged or predetermined plan of prosecuting enquiry—little of discrimination between fact and conjecture, and less of distinction of effects from causes. All is a chaos of doubt or fallacy; a substitution of assertion for argument; of pre-judgment for enquiry; of the sophism which is meant to dazzle, for the philosophy which ought to instruct.

Happily, however, for the honour of medicine as an art, its principles are not so mercurial and base-

less, as some would fain lead us to believe ; and, although it cannot be ranked among the abstract sciences, since the materials on which it works admit not of results unerring and mathematical—and it might be difficult to place its facts within the grasp of induction—yet it is aboundingly rich in its store of observations, accumulated from experience. What, then, is to be thought of the circumstance—for it is an undeniable one—that, after eight thousand cases have occurred within a few months in this island, of a disease hitherto new and unknown among us, and so marked in its leading characters, that he who runs may read them, not only should no generally received conclusion have been arrived at, regarding its nature and peculiarities, but that its identity, nay, even its very existence, should, with many in the profession, be a matter of question? But it is time to turn from this humiliating and melancholy subject.

The reason for the following pages being submitted to the public, will be found in the general deductions which must be drawn from the views here endeavoured to be established, and which intimately concern, not only the safety of individuals, but the welfare of the nation.

MALIGNANT CHOLERA *either an Epidemic or
a Contagious Disease.*

FROM an examination of the histories of Malignant Cholera before it reached these shores, and from an extensive observation of its phenomena since it appeared within them, the author thinks it plain, that all must be forced to come to one of two conclusions ; either,

1stly, Malignant Cholera must be a disease propagated solely by communication of the sick with the healthy ; or, in other words, by human contagion ;—or,

2dly, Malignant Cholera must be an Epidemic disease ; or, in other words, one dependent either on atmospherical or terrestrial influences.

Before considering the arguments and proofs for and against either of these conclusions, it seems necessary to allude to a circumstance which applies equally to both—I mean the necessity of the admission of predisposing causes.

It is constantly asked by those who deny the human communicability of Malignant Cholera, why all those who have come in contact with the sick, and have washed, dressed, or rubbed them, do not take the disease, and why medical men escape ? But does

not the same objection—even were it well founded, as it is not—apply with ten times greater force to the admission of Malignant Cholera as a purely epidemic disease? Even in the streets of a large city, amid the throng of human intercourse, and during as severe an irruption of the disease as ever yet appeared, there might be some chance of escape, if the principle of contagion is alone admitted, without the safety valve of a predisposing cause. But, under the same circumstances, were the disease an epidemic one, not a single person could possibly escape. The objection is therefore worse than frivolous, and recoils with vengeance on the head of the proposer.

The object of the following pages, therefore, is, by a rigid examination of the facts which have come almost entirely under the writer's personal observation, to show, in the first place, *positively*, that Malignant Cholera is a disease produced by a contagious effluvium from the human body, and transmitted from one locality to another, solely by human intercourse; and, in the second place, *negatively*, that it does not depend at all either on atmospherical or terrestrial influence, and is therefore neither an endemic nor an epidemic disease.

MALIGNANT CHOLERA *proved to be Contagious, from an Examination of Cases which occurred at Musselburgh, and its Vicinity, during the first Week of the Disease there.*

As the following personal observations on the human communicability of Malignant Cholera were made almost entirely at Musselburgh, where the disease has prevailed to a greater extent, all circumstances considered, than hitherto in any other locality in Great Britain, it may be deemed necessary to preface them with a few general statistical remarks.

Suffice it, then, to say, that the parish of Inveresk, in which the town of Musselburgh, comprehending Fisherrow, is situated, is between two and three miles long, and nearly of the same breadth; and, by the census of last year, was found to possess a population of eight thousand, nine hundred, and sixty-one souls. It is washed, along its northern margin, by the Frith of Forth, and is bounded to the westward by Newton and Duddingston; to the southward, by Dalkeith; and to the eastward, by Prestonpans and Trant. It is nearly flat for a considerable extent inland from the sea, and rises into gentle acclivities as it recedes to the south.

The general situation of the parish is remarkable for natural beauty; and, by unanimous consent, has been allowed to be one of the most delightful and salubrious anywhere to be met with in the island. The

soil is particularly dry and fertile; nowhere, perhaps, in Scotland, does a smaller proportion of rain fall; and, in earliness of vegetation, the climate nearly approximates to the more favoured districts of England.

Musselburgh, properly so called, consists of a spacious main street, extending from the Esk, on the west, to Pinkie-house, on the east; and is intersected by the lanes leading to Newbigging, on the south, and to Millhill, on the north. Several by-streets are also connected with it, at various parts; and the houses on either side, forming the High Street, have closes running backwards from them.

Fisherrow is seated on the opposite side of the Esk, and is connected with Musselburgh by two stone, and by two wooden bridges. It consists of a long main street, extending from the vicinity of the harbour to the uppermost wooden bridge; and a narrow ancient street, running in a more southerly direction from its western extremity, is termed Market Street. It is intersected by lanes running north and south, termed the Vennel, and the Fishers' Wynd; and, at the farther extremity of the latter, that is, nearer to the sea, stands the back street of Fisherrow, which is wide and spacious, and in like manner intersected with lanes, running more seaward still. Between the front and back street of Fisherrow, run a succession of long, narrow, ill-kept closes. A line of houses, under the names of Old and New Bridge End, and Eskside, extend along the northern bank of the river. The road from Edinburgh to London is

through the main streets of Fisherrow and Musselburgh, which together are about a mile long.

About as far from the sea-beach, stands the village of Inveresk, which has for several ages been a favourite site for villas, and, from the beauty and salubrity of its situation, has obtained the appellation of the Montpelier of Scotland. The slope banks to the south form a natural crescent, and are divided into beautiful gardens; the river Esk flowing through the valley immediately behind. Here the course of the stream is westward. It then winds round the extremity of the gentle hill on which Inveresk stands, and, taking a turn northwards, runs down to the sea; its banks dividing the population of Musselburgh from that of Fisherrow.

The extent and nature of this population may be best seen in the following summary of the census made within the last year.

Inhabited houses, 1154—Families,	1922
Families employed in agriculture,	162
——— employed in trade and manufactures,	656
All other families,	1104
Males,	4257
Females,	4704
Total population of parish of Inveresk,	8961

Of this number about 7500 are supposed to reside in the town of Musselburgh, and its immediate suburbs. As a proof of the dry and healthy situation of the whole parish, it is stated by Mr Brown, in his recent letter

to the Central Board of Health, that in forty-four years' practice, he had not met with a single case of intermittent fever, originating from local malarious causes. The annual average mortality of the parish is about 180.

Malignant Cholera first showed itself at Haddington on the 17th December 1831, at Tranent on 8th January 1832, and at Musselburgh on 18th of the same month. The disease was conveyed from Tranent to Prestonpans, and made its appearance at the Cuthill there, on the evening of Friday the 20th; from Prestonpans to Cockenzie on the 24th; and from Musselburgh to Portobello on the 12th February. The circumstances from which these conclusions are drawn will be immediately given.

From the old woman Wilkie, who formed the subject of the first Cholera death at Musselburgh, having been removed, it becomes nearly impossible to make any satisfactory or conclusive investigations, as to the source whence infection was in that particular instance derived. I have every reason to think that several, whose symptoms did not excite attention until the following day, were earlier martyrs to the contagion; although, from the debility of her constitution, and somewhat advanced years—indeed from a combination of all the most highly predisposing causes—this woman was the first who suffered. Both Mrs Law, east end of High Street, and Mrs Mason, Bridge End, cases a full half mile distant from each other, were labouring under choleric diarrhœa, afterwards terminating in an aggravated form of the

disease on Tuesday, 17th, the day preceding that of Mrs Wilkie's attack.

The particulars of Mrs Law's case I have detailed in my pamphlet on Cholera (edit. 2d, p. 59-60). Her residence is immediately opposite the Town-Hall, at the head of Ponton's Close; and in that and the next close, which is only the breadth of a single house distant, I was, within twenty-four hours from the time of her attack, called in to see Robert Hilston, Widow Jardine, Peter Paxton, Agnes Paterson, and Widow Edie, all labouring under the same form of disease. The extreme distance between the two most remote of these cases could not be thirty yards; and—mark the fact, not another case, besides these, existed at the time in Newbigging, Inveresk, the front or back streets of Fisherrow, or anywhere else in the eastern district of Musselburgh, where they occurred,—a district containing, of itself, at least a population of one thousand souls.

Taking Wilkie's as the first, the second case of Cholera at Musselburgh showed itself in Millhill, a street running nearly parallel with the High Street, but 150 or 200 yards to the northward. This was in the person of Barbara Mackay, a girl of seventeen; and a more particular importance attaches to it, not only as being the commencement of a family tragedy, but as the source of infection, whence the two subsequent fatal cases in Skinner's Close, Edinburgh, and a third, in Leith, were derived.

The death of this girl renders it, in her case also, difficult to ascertain where the infection was caught

by her ; but that she was quite in the focus, whenever predisposed, to become a victim to Cholera, will immediately appear.

On Wednesday, 18th January, Jane Smith and two children came to the lodging-house of Mrs Mackay, with a travelling passport. One of the children was sick, and Mrs Mackay's oldest daughter offered her some advice about its management.

In the evening, the husband of this woman came also seeking lodgings, and had with him a very large bundle ; what the contents were has not been ascertained. Both husband and wife had, a fortnight before, come through the north of England, and had taken the road of Newcastle and Berwick, and thence to Kelso, Dalkeith, and Edinburgh. At the last-mentioned place they had remained three days, and were on their journey back to the south—a way of procuring temporary subsistence by passport by no means uncommon. When the girl Barbara Mackay came home from work at the hair-cloth factory, she took the sick child in her arms, and kept it for a considerable time. After this, she made supper on potato and herring, and went to bed.

This girl had, contrary to the advice of her mother, been induced, by an acquaintance in Fisherrow, to go to some dancing party in Edinburgh on the evening of Monday, 16th, (Handsel Monday.) At this time she was “after the manner of women ;” and, in the course of that evening, she fainted, and had to be carried from the room where her companions were met.

On the day following (Tuesday, 17th) she was seized with diarrhœa ; but did not return to her mother's until seven o'clock in the evening. Her bowel complaint continued on the Wednesday, but not to the extent of keeping her from her usual employment ; on her return from which, she found the woman Smith with her children in her mother's. It was at this time that she took the sickly child in her arms.

This girl died at five on the afternoon of Thursday ; and, on that same evening, another lodger came to the house, in the person of Francis Toners, a dresser of hats, who had journeyed directly from Shields, and who boasted of having with immunity slept, the night previous to his departure from that place, in the bed of a woman who had just died from Cholera. Of this person I shall almost immediately give some farther particulars. When he came to Mackay's he was in a state of intoxication, and beside him at the same hearth sat Mrs Mackay, who died of Cholera within forty-eight hours afterwards, and the boy, who on his return to Edinburgh carried the disease with him to Skinner's Close. On the Saturday, a sister of Mrs Mackay came from Leith to enquire after the family ; and being also seized with the disease, died on the day following. Her husband, Baxter, a shoemaker, on his arrival found his wife dead, and carried home with him some of her articles of wearing apparel. Amid the thirty thousand constituting the population of Leith, not one case of the disease at this time existed, yet within a day or two

of his return thither, he also died ; and that the contagion did not spread, was, “ if we have writ our annals true,” less owing to the nature of the disease, than to the vigilance of the Board of Health there. Here, then, within the walls of an isolated cottage, we have, in less than four days, the origin of six fatal cases of Cholera Asphyxia—three of them occurring on the spot, one in Leith, and two in Edinburgh. Up to the death of the last, not a single case appeared beyond its walls in all that division of the district, either in the street of Millhill, or in the Wynd by which it communicates with Musselburgh, both of which are immediately contiguous.

About the beginning of the following week, Mrs Taylor, a woman residing at the extremity of the Millhill to the west, was attacked by the disease. After a severe illness she recovered ; and upon examination, the source of her infection was distinctly traced to an acquaintance of hers, of the name of Curtis, residing in the High Street, who had fallen a victim a few days before, and into whose house she had been unfortunately urged to go, while labouring under great nervous apprehension of the disease.

Only two other cases of Cholera Asphyxia occurred in Millhill, and this may in a great measure be ascribed to the isolated situation of both Taylor’s and Mackay’s houses. The latter is not in the street of Millhill, but on the opposite side of the Mill-dam. The only other cottage along the same line of wall is occupied by one of the men belonging to the Sea-

mill, named James Bell, and is distant from Mackay's about 80 or 100 yards. The persons attacked were Mrs Bell, his wife, and Annie Sinclair, a widow, residing on the opposite side of Mill-dam, in the public street. The history of both cases is briefly as follows :—

Mrs Bell, on the night of Saturday, went out to the stream for water, and meeting with a neighbour, remained in conversation for nearly an hour. The air was chilly, and when she reached her own door she was seized with shivering. She passed a restless and feverish night ; and although not confined to bed, she did not venture to church on the Sabbath. On the afternoon of that day, she was called into Mackay's cottage, for the purpose of quelling some broil, which had taken place among the inmates. Her stay there was not above a few minutes ; but on returning home she suddenly fell sick, and was seized with diarrhœa very shortly afterwards. This continued to increase in severity during the night, and, on the morning following, ended in a regular attack of Cholera—from which she at length, after a tedious consecutive fever, recovered.

To prevent communication and access to strangers, a constable was placed over the door ; but, ere this precaution was resorted to, Annie Sinclair, the other woman alluded to, had visited Mrs Bell, and had sat for an hour by her bedside. This was on Tuesday, 21st February ; and on the Thursday morning she was also attacked with the diarrhœa. When called in to visit her, on the next day, I found her symp-

toms rapidly subsiding into collapse, and the rice water evacuations coming away in considerable quantity.

From the obstinate opposition this woman made to being removed to the hospital, it became instantly necessary to attend to the safety of those residing in the same house, which was divided into compartments, and occupied by five different families,—several of the individuals belonging to it, both male and female, being employed in the extensive sail-cloth manufactory of Messrs Gavin and Co., at the Links. To preserve the establishment from contagion, became therefore a matter of great importance, as, from the nature of the employment, a number of individuals were necessarily congregated under the same roof.

The inmates, finding that they could not be accommodated with temporary lodgings elsewhere, agreed to remain under the surveillance of the police, and to keep strictly away from the apartment of this woman, which was in an addition which had been, at an after period, made to the back part of the original dwelling-house. Fumigations of chlorine were regularly made in all the apartments, and the woman, becoming convalescent, at length consented to be carried to an isolated cottage in an adjoining garden. After ten days' quarantine, I made a general inspection of them; and, finding all in good health, they were permitted to return to their wonted occupations. Nor has a single case shown itself, either in that neighbourhood, or in any of the persons connected with the sail-

cloth establishment, though with the other workers employed there, the *detenus* were again permitted to commingle.

Before quitting the four houses in which Cholera showed itself in Millhill, and to three of which we have traced the contagion unequivocally, incontrovertibly, and directly, we beg to add the following extract from the day-book of the person who relieves the passports of travellers and vagrants from one parish to another; to show, that if in the case of the Mackays some doubt may remain as to whence the mischief was derived, yet that there is no necessity for resorting to the desperate suppositions of either epidemic or sporadic origin. The following people, besides many others, who had no claims to parish relief, slept in the cottage between the 9th and the 18th January:—

10th, Wm. Bell and wife, from North Berwick to Dumfries. John Robertson, from Inverkeithing to Newcastle.

11th, Thomas Gibbons, wife and two children, from London to Fife. Jane Donaldson and child, from Berwick to Aberdeen.

13th, William Holtar, from Dunbar to Edinburgh. Thomas Gibson, from Berwick to Glasgow. Mary Murray, from Glasgow to Dunbar.

18th, William Russell and wife, from Glasgow to Shields. Jane Smith and two children, from Airdrie to Newcastle. One of the children sick.

If, therefore, the source of infection in Barbara

Mackay's case be not distinctly ascertained, let it not be rashly averred, after this statement, that she could not possibly have received the disease from human communication. In many cases of measles, hooping-cough, smallpox, and typhus, we have no clue to the contagion whatever; but no one ought to be so bold as assert, that there had been no approach or contact between the healthy and the sick.

Taking Wilkie's for the first case, and Mackay's for the second, the third may be said to have shown itself in the Coalpits—a village situated about a mile south from Inveresk, on the old Dalkeith line of road, and inhabited exclusively by colliers. The cottages form two sides of a square, and face the north and west.

It was here that Margaret Watson was attacked, at four in the morning of Thursday, 19th January, and died at half past seven on the same evening. She was thirty-four years of age, was the mother of five children, and had been for some time in straitened and impoverished circumstances, from her husband not being employed at the coal-work; and hence predisposed to the disease. She was attended during her illness by Jean Galloway, an old woman, who lived four doors distant, and who was employed in rubbing her limbs when cramped. This woman was also seized, and died on the same night at half past nine o'clock.

Both bodies were, on the Saturday, conveyed to the churchyard of Inveresk at the same time, and the vehicle was attended thither by George Clarkson, the hus-

band of the former. He was labouring under diarrhœa at this time, and while the bodies were committing to the grave he took more alarmingly ill, and returned home, where he died at half past one on the morning of Monday 23d. His brother, Henry Clarkson, a fisherman, who had gone to visit the family during their calamitous visitation, informed me that he also was slightly affected, and had diarrhœa for five days.

Where Margaret Watson caught the disease, or from whom, cannot be now authenticated with that certainty which is desirable, for the dead tell no tales, and it is nearly impossible to learn where she had been, or who were in company with her during the few days immediately preceding her death. It is certain, however, that she spent the evening of Monday, the 16th, Handsel Monday—a day of peculiar festivity among the lower orders in Scotland—not at home, but down in one of the closes at the head of Fisherrow, in the house of her sister; and it ought also to be remembered, that several of the inhabitants of the Coalpits had been at this time at Tranent and Prestonpans, where the Cholera was then raging, soliciting employment from the coal proprietors there. People from both these places were also, on that week, visiting at the Coalpits. A double chance was thus given to Cholera being brought from these infected districts.

I have already remarked, however, that much fallacy has in all probability arisen, not only from the three cases at Musselburgh, Millhill, and Coalpits, having been taken without proper investigation as

the first cases of Cholera Asphyxia in the parish of Inveresk, but from the certainty of the infection having been brought to it at several localities nearly about the same day, which was either Monday, 16th, or Tuesday, the day following. At Sunderland, an immense increase in the number of cases took place immediately consequent on the festivities of Christmas; and in Musselburgh, in like manner, from the interchange of socialities on Handsel Monday, which are generally protracted till the subsequent evening at least, the amplest opportunities were afforded for the propagation of the contagion. The following may be adduced from among many other instances.

The Bridge End is a line of houses extending along the northern bank of the Esk, between the New and Roman bridges over that river, and upwards towards Stony Bank. These houses face the river, and closes run backwards from them. The line is broken nearly about its centre by the Market Street, a long narrow lane, running north-west from the extremity of the Old Bridge. It thus forms two divisions, the former extending from the New Bridge to the Old; the latter from the New Bridge upwards along the bank of the Esk.

In this upper division of Bridge End, there were attacked, on Friday, 20th January, Mrs Mason, William Bell, William Inglis, Anne Inglis, Widow Kemp, and William Bishop; on the day following, Abraham Bell, Jean Shiels, Hugh Peacock, Jean Steele, and James Lees; and on Sunday, William Reid. Two days afterwards the disease attacked Mrs Muir-

head, and her son, Livingstone Muirhead, both residing next door to James Lees, whose sister and father were also seized with the premonitory symptoms.

On investigation into the circumstances attending the appearance of these cases,—not one of which was fifty yards distant from the other, and three fourths of them confined to the same tenement, at a time, too, when whole districts and divisions of the parish were unscathed, and when indeed not ten cases existed among the three thousand people constituting the inhabitants of Fisherrow,—the following facts were elicited from Mrs Bell, a respectable woman, within whose own house three of them occurred.

On Tuesday, 17th, the day preceding the appearance of any recorded case at Musselburgh, Mrs Mason, a person addicted to intemperate habits, came in, from her own house, which was immediately contiguous to that of Mrs Bell, complaining of her sufferings from diarrhœa; and, on the succeeding evening, as Mrs Bell was passing the door of Mrs Reid, Mrs Mason's sister, she was solicited to go in for a few minutes, and partake of their holiday cheer. She found there William Reid and wife; Hugh Peacock; Jean and Janet Steele; and Mrs Mason. Let it be accounted for as it may—but there is no disputing the fact—that the first and last fell victims to the disease, and every one present was attacked by it, save Mrs Bell and Reid's wife, and that within forty-eight hours of this meeting around the same table.

Although Mrs Bell, however, herself escaped the disease, it was unfortunately communicated to her

son, who slept in the same bed, and whom I found in a state of collapse, at six on the morning of Friday, 20th. On the same night, William Bishop, a boarder in the house, was attacked; and, on the following morning, Mrs Bell's husband. Within a week, the only other inmate of the habitation, a child of three years old, was also seized with the disease in an aggravated form.

On February 1st, a fresh importation of the disease was brought to the Bridge End, and showed itself in a house a few doors farther up the river side, in the house of a Mrs Blythe. This person was a relative or intimate acquaintance of a family of the name of Robertson at Tranent, of whom the father, a son, and a daughter, had just died of Cholera. Probably from the kindest motives, she had been induced, after visiting them in their affliction, to bring the rest home with her to Musselburgh, together with the unwashed clothes of those who had already fallen victims. On the very night of their arrival, one of the two girls was seized, and died within forty hours; and the widow, with her remaining daughter, was sent home by order of the Musselburgh Board of Health. The other daughter, Helen, as will be seen in the admirable account of Mr Cadell, was attacked after her return to Tranent, and recovered. A day or two after the death of the girl Robertson from Tranent, Jessie M'Callop, a young woman residing in the next close to that of Mrs Blythe, also caught the infection, and fell a victim to it.

In the course of the week subsequent to that in

which Malignant Cholera appeared in Musselburgh, so great was the accumulation of cases, in almost all the districts, that neither time nor opportunity was afforded for tracing out the sources of infection. Out of one of the closes at the head of Fisherrow alone, twenty-four people were buried, and not a house escaped from the one extremity of it to the other : while, in several at the lower termination of the same street, not one case occurred.

Having thus, from the first week of the disease at Musselburgh, afforded proofs, amounting to demonstration, of its direct and immediate propagation by human contact, totally independent, as I will shortly show, either of epidemic causes, or local malarious influence, I will now adduce some striking probabilities of Malignant Cholera being communicable, not only by infected inanimate substances, but by the intervention of a third person, himself not necessarily labouring under the disease.

1. Mrs Black, the wife of a cork-cutter, living in the same close with Mrs Wilkie, and in an adjoining tenement, was asked by the husband of the latter, a few hours after her interment, to cook for his dinner a bit of meat which had lain in his house at the same time with the corpse of his wife. She did not like to refuse, but reluctantly acquiesced, and, as the meat was somewhat tainted, she became sick after smelling it. She was almost immediately afterwards seized with shivering, which was succeeded by violent symptoms of the disease, of which she died on the succeeding day.

It may be argued, that, admitting infection, it might have been as well brought by Wilkie himself as by the meat he carried. Be it so—as he himself escaped the disease.

2. On the evening of the day, when Cholera first manifested itself in Musselburgh, in the case of Wilkie's wife, the daughter-in-law of that woman carried out the blood, which had been abstracted from her arm by Mr Sibbald, and threw it into the mill-dam, which runs nearly under the windows of the houses on the opposite side of the street. Mrs Shivers, the wife of a hatter, chanced to be leaning out of one of these at the time, and the vessel was emptied into the water within a few yards of her. She was shortly after seized with sickness and shivering, and, on the day following, was attacked with the disease in a virulent form. This woman might, however, have caught the disease in another way, from her husband having been, the afternoon before, in the company of Joseph Argo, a hatter, who was violently seized on the following morning, and whose son afterwards died. Whether we admit the first or the second exposition, in either case the contagion was conveyed by inanimate substance, as the husband himself escaped.

3. Mrs Law, residing opposite the Town-Hall, Musselburgh, exhibited symptoms of violent Cholera on Thursday, 19th January. She cannot remember having been in communication with any infected person, but, on interrogation, recollected having been called upon, a day or two before her illness, by Jacob

Toners, a dissipated travelling hatter, from Shields,—who confessed, that, on the night before leaving that place, he had slept in the bed of a woman who had just died of Cholera. Toners was lodging at this time in a house in the close adjoining, kept for the accommodation of strangers, by a woman named Betty Wallace. The close is very narrow—not above a few yards in width—and in the door nearly immediately opposite, lived Widow Paxton, whose son Peter was attacked on Friday, the 20th.

4. On examining Widow Paxton, after the recovery of her son, it was found that this man Toners had twice come into her house, mistaking it for the one in which he lodged, in a state of intoxication; and that, after remaining for each [time above an hour, she had, with difficulty, got him persuaded to remove from her fireside. This was two or three days previous to the attack of her son.

Toners removed to the lodging-house of Mrs Mackay, Millhill, on Thursday, 19th, the day on which Barbara Mackay died there; and afterwards changed his quarters, on account of the deaths which for several days succeeded each other in that house, to the house of a rag-collector named Hodgson, at Tod's Bridge. Two fatal cases occurred within forty-eight hours of this time in Hodgson's close;—these were, Mrs Stewart Wilkie, the daughter-in-law of the woman who first suffered, and a child named Jean Brown, residing in the flat below. Two colliers and a girl were afterwards carried from Hodgson's own house

to the Cholera hospital, both of the former in a state of fatal collapse.

By an order of the Magistracy, all the lodging-houses within the bounds of the parish were inspected and cleared a few days after this; and Toner was, among other vagrants, ejected from the town. What became of him afterwards, I have no means of ascertaining. His subsequent career might be worth tracing out.

5. Richard Stewart, shoemaker, Market Street, carried home, from Mr Mitchell's wood-yard, some articles of furniture, the property of his late mother, Jeanie Findlay, who died on Saturday, 28th January.* No case of Cholera at this time existed in the division of the street where he lived, yet next day he was seized with the disease, and died. On the day following his decease, the wife, having caught the infection in attendance on her husband, also fell a victim.

Here, then, is another, from among many examples, of a person residing in an uninfected locality bringing back the disease to it, and communicating it to those about him.

6. William Boatwood, tanner, head of Wonder Street, carried some bed-clothes and articles of furniture to that place from the house of his mother, who had died the day before at the west end of High Street,

* For an account of the results of the infection introduced by this old dependant into Mr Mitchell's own family, see Practical Observations, Ed. 2d. p. 46.

Musselburgh. No case of the disease at that time existed in Wonder Street, yet in a few days this man was seized with Cholera, as was also his father, whom he had persuaded to come and reside with him. A girl of the name of Ferguson, at the head of Newbigging, was employed to wash the clothes thus brought from the infected house, and within forty-eight hours from that date she was seized with the disease, and fell a victim to it. Mrs Boatwood, jun., the other person employed at the washing, was likewise seized with the premonitory symptoms; but, by timely application for medical aid, the progress of the malady was arrested.

7. Mrs Kirk, residing at head of Fisherrow, went, on Tuesday, 28th February, many days after any case of Cholera had appeared in that district, to assist in putting to order the house of her relative, Mrs Cleghorn, who had, a week or two before, fallen a victim to it, in the back street of Fisherrow. Two days afterwards she was seized with the disease, and died on Saturday, March 3d.

8. Through the kindness of Dr Vallange of Portobello, I am enabled to give an account of the introduction of Malignant Cholera into Pipe Street there. I quote his own words.

“ In the house where these cases broke out upon the 12th February, clothes were known to have been brought to a Mrs Struthers from your own town, whose mother, sister, and brother, of the name of Cooper, were taken to your hospital, one or more of

whom died. Part of their clothes had been brought here, a portion of which was found by some of the members composing our Board of Health, and destroyed; but some blankets escaped detection, and were said to have been concealed by a Mrs Campbell, who also had a daughter in Musselburgh. Mrs Campbell was taken ill, and died four days after the disease had appeared in the house where the clothes were originally brought to. Her husband or son conveyed the body of Ritchie on his cart to the churchyard of Duddingston, and the straw used upon the occasion was brought back to his premises; and this son and a daughter fell victims to the disease. Two days after Mrs Campbell's attack, viz. on the 17th, six cases occurred in that tenement, all of whom died before next morning's sun arose. The girl who brought the clothes was not taken ill till the 5th of March. She recovered. The assistant nurse at the hospital was taken ill on the 16th March, and has recovered.

“ Mr Hill and myself, who were in attendance, likewise suffered from the disease. Fever having supervened in Mr Hill's case, he is not yet recovered. He was attacked on the 17th of last month.”

9. The remains of Fitzpatrick, a beggar, were removed from Tranent churchyard on 24th January. Andrew King, a coal-carter, and Robert Innes, hospital porter, were suspected of having committed this act. They were attacked on the day following, and died on 26th.

A similar story is connected with a fatal case, which lately took place at Pathhead ; but, from some of the parties concerned in that transaction being still alive, the particulars are withheld for obvious reasons.*

10. Marion Robertson, residing in the lane leading northward from foot of Fisher's Wynd, was seized with diarrhœa on Sunday, 29th January, but not so severely as to disable her from attending the Edinburgh fish-market on the following morning. While there she became worse, and was brought home in a cart, that evening, about half-past seven. She died

* From among a number of instances of contagion from the dead body, the following may be recorded as particularly striking.

“ On the 5th of September,” says Dr Becker, “ a Cholera dissection was performed in one of the streets near the river (Schleuse), which had been the seat of the first and numerous successive cases of the disease. Four young physicians present, not satisfied with the information derived from the senses of sight, touch, and smell, thought proper to ascertain the properties of the blood, and contents of the intestines, by tasting these fluids. One of these gentlemen, Dr C., one of the loudest adversaries of contagion, before and since the appearance of Cholera at Berlin, had for a fortnight laboured under diarrhœa, but continued his professional avocations. On the 7th he again attended a Cholera patient in the evening ; on the morning of the 8th he was attacked with Cholera, and died that evening.

“ Another of the physicians mentioned above, Dr I——, accompanied me to Dr C——'s sick-bed ; we saw him half an hour before his death. I shall never forget the words he said, with the suppressed voice so peculiar to Cholera patients : ‘ Ah, Dr I——, beware ! let my fate be an example to you ! ’ ”—*Letters on the Cholera in Prussia*, p. 13.

the same night, at eleven o'clock. On this event taking place, her husband, A. Gibson, was taken by his brother to a house considerably to the westward, in the back-street of Fisherrow, where he remained for more than a week. The day after his return to his own home, which had been locked up, he was seized with the disease, and fell a victim to it. It may be deemed worthy of remark, that he was one of the two cases of whom Professor Delpech took the partial management.

It would be easy to go on thus, almost *ad infinitum*. One more illustration, and we have done.

11. A girl, Christian Bonthron, was seized with Cholera in a house, back street of Fisherrow, and it speedily proved fatal. Her remains were attended to the grave by her father, David Bonthron, William Lutot, Michael Ramsay, and Andrew Smart, all of whom returned after the interment to the house whence the corpse had been taken, for the purpose of getting some little refreshment. Euphemia Bonthron, an aunt, and who had laid the body into the coffin, also sat down with them at the same table. While so seated, the father became sick; violent symptoms of the disease showed themselves; and he died on the next morning, at eight o'clock. On the next day, Michael Ramsay, Andrew Smart, and William Lutot, were all seized with the premonitory symptoms. The two last recovered. Ramsay, however, died the same night; and his wife, Jean Cockburn, who had caught the infection from him, died also within twenty-four hours.

Euphemia Bonthron, the other person seated at the same table, and who had assisted in putting the body into the coffin, was also seized with the disease, and died in her own house, at the head of Fisher's Wynd—a locality where the pestilence was not at that time existing.

Let it, in conclusion, be remembered, that the doctrine of contagion, whether relating to this, or any other disease, is one which is incapable of complete demonstration, and must therefore depend on circumstantial probabilities alone. How the facts now given are to be answered, surpasses my comprehension. Not surely by producing examples of immunities from attack in persons apparently exposed to such, while not under the influence, at least in a sufficient degree, of the predisposing causes. If some die, who are thus exposed, it is all that is required for the settlement of this question; for, by a parity of reasoning, if it were not a contagious but an epidemic disease, none could ever escape.

To get out of this dilemma, the anti-contagionist can only have recourse to his panacea of an epidemic influence. Having thus intrenched ourselves with facts regarding the human contagion of Malignant Cholera, we shall now proceed to drive the adversary out of his own stronghold—the supposititious existence of a local malarious atmosphere.

In complete corroboration of the views here laid down, as connected with the history of Malignant Cholera, during the first week of its spread at Musselburgh, I have the extreme pleasure of being able to

add a similar document—and still less controvertible one—from Tranent. For this I am indebted to the kindness of W. Francis Cadell, Esq. J. P., Secretary to the Board of Health there; whose zeal and exertions for the public safety, during the prevalence of the pestilence in that neighbourhood, will ever redound to his honour.

“ Cockenzie, 19th March, 1832.

“ DAVID M. MOIR, Esq.

“ SIR,

“ I RECEIVED your letter of the 16th instant, and am sorry that I am unable to give you such a distinct account of the introduction of Cholera into Tranent, and the manner in which it was afterwards communicated from one person to another, as I could wish.

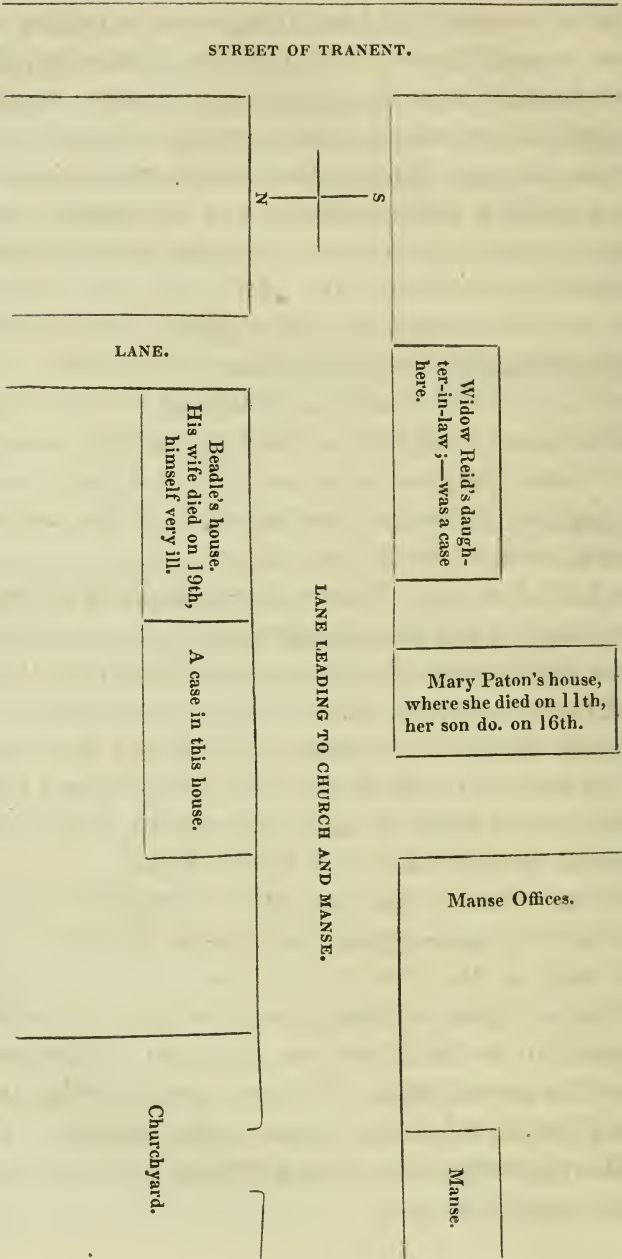
“ On the first appearance of the disease, I commenced a journal of occurrences, which came under my immediate observation, and of circumstances which daily were made known to me, and intended to keep it fully and regularly; the very rapid increase of the malady, however, occasioned so many pressing and necessary duties, that my intentions were much interfered with.

“ It has never been satisfactorily ascertained how the complaint found its way to Tranent. Alexander Liddell, beadle, was the first person who complained of diarrhœa; he had been ill for several days, and during his illness was visited by Mary Paton, (Widow Mustard,) who lived on the opposite side of the lane.

That old woman had been ailing more or less for several years; she was taken ill on Wednesday, the 11th January, and died on the following day; and although no medical practitioner visited Mary Paton, it was generally believed, from the accounts given by the attendants of the symptoms of the disease, that her complaint was Cholera. After his mother's death, Andrew Mustard, (a weaver, forty-four years of age,) her son, left her house for three nights; on the fourth night, Saturday, the 14th January, he returned, and slept in it. On the morning following, he was seized with Cholera; and died on Monday, the 16th January.

“Widow Reid, an old woman, attended Mary Paton during her illness, and washed some of the clothes of the deceased on Friday, the 13th, and Saturday, the 14th January. Widow Reid's house is between two hundred and three hundred yards up the village, from Mrs Paton's habitation, and she lived ‘but and ben’ with an old pair, William Cuthbertson, and his wife Margaret Kennedy. The former was taken ill on the 18th, and died on the 19th January; the latter on the 19th, and died on the 20th; and Widow Reid on the 20th, and died on the 21st.

“To return to the lane where Mary Paton died: Liddell the beadle's wife was reported ill on the 15th, and died on the 19th, in the house nearly opposite Liddell's. Widow Reid's daughter-in-law was also seized on the 18th, and continued in a dangerous state for several days. Another case likewise took place in the adjoining house to the beadle's. The following rough sketch may render my description more intelligible:—



“ On Saturday, the 14th January, although no intercourse with those previously affected was known to have taken place, the disease got into the family of John Reid, a collier, to an alarming extent.

“ 1st. His son Peter, aged twelve, was taken ill when at work below ground—was supported home—was soon in a state of collapse, and died early on the morning of Sunday, the 15th.

“ 2d. Helen, daughter of John Reid, was likewise employed as a “ bearer ” with her brother Peter on the 14th. She returned home in her usual health, and was busy during the evening in preparing a dress for a procession on Monday, the 16th. About 11 or 12, P.M., she was suddenly seized, and died about noon the following day, (the 15th.)

“ 3d. John Reid (father of Peter and Helen) was taken ill on 15th, and died on 22d.

“ 4th. Margaret Simson (mother of do.) was taken ill on 15th—cured on 27th.

“ 5th. John Nielson, son-in-law of John Reid, and who attended the family of the latter during their illness, was taken ill on 21st, and died on 22d.

“ 6th. William Morton, brother-in-law to John Reid, who lived next door, and also attended John Reid’s family, was reported ill on 25th January, and recovered on 3d February.

“ 7th. William Morton, junior, (son of No. 6,) was reported ill on 1st February, and recovered on the 5th. Janet Reid, wife of William Morton, and sister to the deceased John Reid, was also reported ill on 19th, and recovered on 21st February.

“ Many of the houses contiguous to Reid and Morton’s became infected with Cholera, and the disease advanced progressively up to the southern extremity of the village ; then westward to the “ New Row,” in which at one time almost every house had a Cholera patient in it ; afterwards eastward, but in this part of the town it did not spread so generally as in other portions of the village.

“ The intercourse now became so frequent amongst the inhabitants, and the colliers, their wives, and their daughters, almost daily convened in a “ coal-room ” below ground, and talking about the malady in its most frightful forms, that to trace particular instances of communication became endless. I will therefore now only pick out, from many similar cases, the particulars of the devastation committed in three families after the pestilence got amongst them, viz. :

“ I. THE FAMILY OF JOHN M'LAREN, A COLLIER.

	When seized.	When died.	When recovered.
1. Margaret M'Laren, aged 22,	Jan. 18	Jan. 24	
2. Margaret Beveridge, mother of do. aged 50, (in hospital,)	— 20	— 24	
3. Jane, daughter of do. (in do.)	— 22		Jan. 27
4. Robert, son of do, aged 15, (in do.)	— 23	— 23	

“ II. THE FAMILY OF WILLIAM ROBERTSON, SMITH AND FARRIER.

	When seized.	When died.	When recovered.
1. W. Robertson (father,) aged 53	Jan. 26	Jan. 28	
2. W. Robertson, jun. — 18	— 28	— 31	
3. Isabella Robertson, — 13	— 30	— 30	
On 1st Feb. Widow Robertson went to Musselburgh, where one of them, the			
4. Was taken ill, and died. The Musselburgh authorities sent back the widow and daughter to Tranent, where the			
5. Helen Robertson was taken ill,	Feb. 12		Feb. 16

“ III. THE FAMILY OF LUKE SNADDON, A COLLIER.

	When seized.	When died.	When recovered.
1. Jean Polwart, his wife, aged 45	Jan. 28	Jan. 30	
2. Jas. Snaddon, son of do. (in hospital)	— 29	— 30	
3. Thos. Snaddon do. (in do.)	— 29		Feb. 3
4. Luke Snaddon, the father, (in do.)	— 30	— 31	
5. Joseph Snaddon, son of do. (in do.)	— 30		— 4

“ With regard to your query about the contagion having been conveyed to Prestonpans by a disinterred body, such is not the case. The remains of Fitzpatrick, a beggar, who died of cholera, were removed from Tranent churchyard on the 24th January. Andrew King, a coal-carter, and Robert Innes, hospital porter, were suspected of having committed this act; they were seized on the 25th January, and died on the day following.

“ The disease was supposed to have been conveyed to the Cuthill, (adjoining Prestonpans,) by James Renton, collier, at Prestongrange, who had been visiting his friends at Tranent on Auld Handsel-Monday and Tuesday. He and his child were taken ill on the evening of the 20th January, and died on the 21st. Several cases in adjoining houses immediately followed Renton and child’s illness. Mary Buchan, who lived next door to one of these cases, in the Cuthill, left that place on the evening of the 24th January, and came to her mother’s house in Cockenzie, where she was taken ill of Cholera next morning; her mother and stepfather were also seized some days afterwards, but all the three recovered.

“ In addition to the foregoing, I beg leave to add my own humble opinion, formed from daily enquiries and intercourse with infected places, during the continuance of the disease in this district, that it is decidedly contagious, and in a great degree, to those who are debilitated by intemperance, by being ill fed, ill clothed, and also to colliers who work probably for several hours at a time, in wet places, with damp clothes upon them, and have to walk home in that state during the most inclement weather.

“ I remain, Sir,

“ Your most obedient servant,

“ H. FRAS. CADELL.”

MALIGNANT CHOLERA *proved not to be an Epidemic Disease, or one dependent on particular states of the Earth or Air.*

SETTING aside all the fanciful and fallacious theories regarding the Remote Causes of Malignant Cholera, which have been at various times broached, and several of which are remarkable for their ingenuity,* we are forced at length to return to the

* We particularly advert to a section in the work of Dr Adam Neale, entitled, "Researches to establish the Truth of the Linnæan Doctrine of Animate Contagions," &c., wherein he applies this doctrine to Cholera; and to a clever brochure lately published in Edinburgh, under the title of "An Enquiry into the Remote Causes of Cholera." But to use the author's own words, (p. 5,) we must say, that "similar assumptions, and similar reasoning, equally unsatisfactory, will be found in regard to it, as the theories of those who support atmospheric and terrestrial influences."

I would also particularize an ingenious and sensible essay recently published, by a Member of the Edinburgh Board of Health, entitled "An Enquiry into the Origin, Propagation, and Prevention of Infection, with some Remarks on the Recent Introduction of Cholera into this Country." The author is a contagionist, and affords reasonings for his being so, which will not be found easy of controversion. To his theory of a remote cause, however, we cannot so implicitly assent. He finds the *monstrum horrendum* in *Carbonic Acid Gas*, which the former had found in insects, animalculæ, and rat-tailed larvæ. While therefore he gives some good arguments for his own theory, he thus squabashes the pigmy friends of Linnæus and Lauenhoeck. "It may not be impossible," he says, "that there are sometimes animalculæ in the air and water,

question, Is it an epidemic, or a contagious disease, or both conjoined? That it is a contagious disease in a virulent degree, we have shown by demonstration as conclusive as the nature of medical evidence admits; that it is not an epidemic, or, in other words, a disease arising from, or dependent on atmospherical or terrestrial changes, can be established by arguments, founded on data little less liable to deceive either ourselves or others.

The following are annotations on the weather, made in Bridge Street, the line of communication between Musselburgh and Fisherrow, with which I have been kindly furnished by my neighbour, Mr Carrol, author of "the Angler's Vade-Mecum." It commences with the beginning of the year, seventeen days before the appearance of the Malignant Cholera in the parish of Inveresk, and extends to the time of its leaving it. If, in a general point of view, any thing can be found in it, which may be supposed to distinguish it from tables of the same months, kept in preceding years, I must confess I have not been able to discover it, farther than the circumstance of western winds having prevailed to a more than usual extent; and the season being of less severity than is commonly experienced in our latitudes.

that are very pernicious to human life; but, to assert that such are the cause of the present malady, without proof, resembles very much the Indian's mode of getting rid of a difficulty, when he placed the earth on the back of an elephant."

ANNOTATIONS on the Weather, made at Musselburgh from 1st January, 1832, to 1st March; with a daily Statement of the Number of Cholera Cases, as reported by the Medical Board there.

TABLE OF WEATHER.			CHOLERA REPORT.	
1832.		Ther.	New Cases.	Deaths.
Jan. 1.	Wind southerly; frosty; with streaky clouds from west. 8 morn.	48*		
Mon. 2.	Wind west; very cloudy; slight shower of hail, with hoar-frost.			
Tues. 3.	Wind south; frosty, and cloudy.			
Wed. 4.	Wind south; frosty, and cloudy.			
Thurs. 5.	Wind south; frosty, and clear.	40		
Frid. 6.	Wind southerly; frost, and light fog.	50		
Sat. 7.	Wind south-east; soft rain about eleven A.M.			
Sun. 8.	Wind east by south; soft rain during night and in morning; air fresh; cloudy, particularly in south.			
Mon. 9.	Wind east, with drizzling rain.			
Tues. 10.	Wind south, with small rain.			
Wed. 11, } 12, 13. }	Wind southerly; wind light, with showers; air temperate.			
Sat. 14.	Light wind, southerly, and frosty; snow on the hills.			
Sun. 15.	Wind south-west; cool and cloudy.			
Mon. 16.	Wind southerly, and cloudy; a mist round the moon, evening.			
Tues. 17.	Wind southerly; light clouds.			
Wed. 18.	Wind south-west; cold light rain, and dark grey sky.	53	1	1
Thurs. 19.	High winds, westerly; cloudy, air temperate.		9	3
Frid. 20.	Wind south-west; light clouds.		17	6
Sat. 21.	Wind south-west; cloudy.		17	5
Sun. 22.	Wind south-west; a grey sky.		19	8
Mon. 23.	Wind westerly; high during the night, with showers.		18	6
Tues. 24.	Wind southerly; stormy, with heavy clouds; wind continued till evening, when rain fell.		16	5
Wed. 25.	Wind south-west; day clear.		17	8
Thurs. 26.	Wind west; morning clear; about 12 small rain, followed by snow; wind shifted to north-west; frost at night.	52	13	4
Frid. 27.	Wind north-west; frost; wind shifted in evening to south-west; thaw in the night.		15	9
Sat. 28.	Wind south-west; thaw; mild.		13	9

* The thermometer was hung in a front room, within doors. An average allowance of ten degrees, between this, and one hung in the open air, seems to make them nearly correspond.

TABLE OF WEATHER.		CHOLERA REPORT.	
1832.	Ther.	New Cases.	Deaths.
Sun. 29.	Wind south-west; air temperate.	9	4
Mon. 30.	Wind west by south; cool and cloudy.	14	7
Tues. 31.	Wind westerly; day fine.	23	12
Feb. 1.	Wind southerly and cool.	25	5
Thurs. 2.	Wind south-west, and cool.	32	10
Frid. 3.	Wind south-west; high wind in night; snow on the hills.	23	18
Sat. 4.	Wind south-west; stormy night and morning; heavy grey clouds, followed by rain; wind at night.	52	13
Sun. 5.	Wind south-west and cloudy; a small flood in the river.	56	16
Mon. 6.	Wind south-west; the high wind fell in the night, and rain followed.	58	17
Tues. 7.	Wind westerly; cloudy.	17	3
Wed. 8.	Wind south-west.	17	8
Thurs. 9.	Wind westerly; rain during the night; day fine.	9	9
Frid. 10.	Wind variable; day fine.	6	6
Sat. 11.	Wind southerly; dark and cloudy.	9	2
Sun. 12.	Wind southerly; clear in morning; gathering clouds in afternoon; air mild; insects flying about.	15	3
Mon. 13.	Wind south-east; with heavy clouds from same point.	10	7
Tues. 14.	Wind southerly and cloudy.	55	5
Wed. 15.	Wind westerly; cool and clear in morning; in the evening broken dark clouds moving from the west.	7	2
Thurs. 16.	Wind south-west and cloudy.	2	0
Frid. 17.	Wind westerly and cloudy.	3	3
Sat. 18.	Wind southerly and cloudy.	3	0
Sun. 19.	Wind southerly; small rain in the morning; day fine.	0	1
Mon. 20.	Wind south-east and cool.	57	1
Tues. 21.	Wind southerly; grey frost.	0	1
Wed. 22.	Wind southerly; hoar frost; evening west westerly; foggy.	52	3
Thurs. 23.	High wind south-west; day clear.	0	0
Frid. 24.	High wind; ditto; ditto; shower in the evening.	3	1
Sat. 25.	Wind westerly; day partly cloudy partly clear.	0	1
Sun. 26.	Wind south; frost in the morning; evening clouded with mild soft showers.	2	1
Mon. 27.	Wind westerly; frost in the night; day clear and fine.	1	0
Tues. 28.	Wind westerly; ditto; ditto.	1	0
Wed. 29.	Wind south-west and cloudy; light shower in morning.	56	1
			2

Let this, therefore, be compared with the following annotations made at St Clement's Wells, situated nearly equidistant from Musselburgh, Tranent, and Prestonpans, at a time when Malignant Cholera was prevailing in all these three places. It is needless to premise, that, like those at Musselburgh, they were made quite in a general way, without reference to any particular object.

1832.

- Jan. 2. A good day, frosty, wind west.
 — 3. A fine day.
 — 4. A good day, some frost, and wind west.
 — 5. A fine day, hard frost, wind west.
 — 6. A fine day, wind north-west.
 — 7. A good day, rather soft, wind west.
 — 8. Sunday.
 — 9. A fine day, wind west.
 — 10. A very fine day, wind west.
 — 11. A good day, some rain, wind west.
 — 12. A fine day, wind west.
 — 13. A fine day, wind west.
 — 14. A good day, some snow, wind south.
 — 15. Sunday.
 — 16. A good day, wind west.
 — 17. A fine day, wind west.
 — 18. A fine day, wind west.
 — 19. A fine day, wind west.
 — 20. A fine day, wind west.
 — 21. A very fine day, wind west.
 — 22. Sunday.
 — 23. A fine day, wind west.
 — 24. A fine day, rather windy, wind west.
 — 25. A fine day, wind west.
 — 26. A good day, some snow in the afternoon, wind east.
 — 27. A frosty day, wind west.
 — 28. A fine day, rather soft, wind west.
 — 29. Sunday.
 — 30. A good day, wind west.
 — 31. A good day, wind west.

1832.

- Feb. 1. A fine day, wind west.
— 2. A fine day, some rain, wind west.
— 3. A fine day, wind west.
— 4. A fine day, wind west.
— 5. Sunday.
— 6. A fine day, some rain afternoon, wind west.
— 7. A fine day, wind west.
— 8. A good day, wind west.
— 9. A fine day, wind west.
— 10. A very fine day, wind west.
— 11. A fine day, rather dull, wind west.
— 12. Sunday.
— 13. A dull day, wind east.
— 14. A good day, wind west.
— 15. A fine day, wind west.
— 16. A good day, wind west.
— 17. A very fine day, wind west.
— 18. A fine day, wind west.
— 19. Sunday.
— 20. A fine day, wind north-west.
— 21. A fine day, frosty, wind east.
— 22. A fine day, wind east.
— 23. A fine day, wind south-west.
— 24. A fine day, wind west.
— 25. A very fine day, wind west.
— 26. Sunday.
— 27. A fine day, wind west.
— 28. A very fine day, wind west.
— 29. A fine day, wind west.

During all this time, only a few straggling and isolated cases occurred in Edinburgh, most of which were found to have been in direct or indirect communication with Musselburgh, or with other infected districts. In what then differed its atmosphere from that of Musselburgh, which appeared armed with pestilence and death? To the kind offices of Sir John Forbes, Bart., I am indebted for the following:—

TABLE of Weather, 1832, kept at the Observatory of the Edinburgh
Astronomical Institution.

Jan.	Wind.	Strength of wind.	WEATHER.
1.	W.	moderate.	Fair, with some sunshine forenoon, cold afternoon.
2.	W.	ditto.	Frosty, with sunshine forenoon, cold afternoon, keen frost night.
3.	W.	ditto.	Keen frost, and very cold.
4.	W.	ditto.	Keen frost, dull, and very cold night.
5.	W.	ditto.	Frost, sunshine forenoon, but very cold.
6.	W.	ditto.	Frost, some sunshine forenoon, but cold.
7.	W.	ditto.	Frost, very dull and cold, some drops of sleet afternoon.
8.	W.	ditto.	Very dull, but fair, mild forenoon.
9.	W.	ditto.	Very dull, a slight shower forenoon, and very cold.
10.	W.	ditto.	Dull forenoon, slight rain afternoon, a heavy shower at night.
11.	W.	ditto.	Frost morning, showers of rain forenoon, heavy rain afternoon and night.
12.	W.	ditto.	Fair and mild forenoon, dull afternoon, rain through night.
13.	W.	ditto.	Fair and mild forenoon, frost afternoon, snow through night.
14.	W.	ditto.	Fair but dull, and mild frost morning.
15.	W.	ditto.	Fair, but dull and cold.
16.	W.	ditto.	Fair, but dull, mild forenoon.
17.	S. W.	high.	Fair, with sunshine forenoon, cold night.
18.	S. W.	ditto.	Fair, with sunshine forenoon, rather mild.
19.	W.	moderate.	Fair, with sunshine, and mild.
20.	W.	ditto.	Fair, but dull and cold at night.
21.	W.	ditto.	Fair, but dull and cold at night.
22.	Cble.	ditto.	Fair, with sunshine forenoon, cold night.
23.	W.	high.	Fair, but dull for the day, rain at night.
24.	W.	very high.	Fair, but cloudy, heavy rain at night.
25.	W.	moderate.	Fair, but very cold.
26.	N. E.	ditto.	Fair morning, a fall of snow through the day, keen frost night.
27.	E.	ditto.	Keen frost, with snow on ground, a thaw through night.
28.	Cble.	high.	Fair, with some sunshine forenoon, and mild.
29.	W.	moderate.	Fair, with sunshine forenoon, cold night.
30.	W.	high.	Fair, with sunshine, but cold.
31.	S. W.	moderate.	Fair, but dull, very cold afternoon.

Feb.	Wind.	Strength of Wind.	WEATHER.
1.	W.	high.	Fair, with sunshine forenoon, but very cold.
2.	W.	ditto.	Fair, with sunshine forenoon, but cold.
3.	W.	very high.	Fair, with sunshine forenoon, very cold afternoon.
4.	W.	high.	Fair, but dull and cold.
5.	W.	ditto.	Fair, but cloudy, and cold rain at and through night.
6.	Cble.	ditto.	Heavy rain for the day and night, and cold.
7.	W.	moderate.	Fair, with sunshine and mild forenoon.
8.	W.	ditto.	Fair, with sunshine forenoon and mild, heavy rain at and through night.
9.	W.	ditto.	Fair, with sunshine and mild forenoon.
10.	W.	ditto.	Fair, with sunshine and mild.
11.	E.	ditto.	Foggy morning, dull and damp for the day.
12.	E.	ditto.	Fair, with sunshine, but cold afternoon.
13.	E.	ditto.	Fair, with sunshine forenoon, cold afternoon.
14.	W.	ditto.	Fair, with sunshine forenoon, cold afternoon and night.
15.	W.	high.	Fair, with sunshine, but cold.
16.	S.W.	ditto.	Fair, but cold and dull.
17.	W.	moderate.	Fair, with sunshine, but cold afternoon.
18.	S.W.	ditto.	Fair, with sunshine, and mild forenoon, cold afternoon, rain through night.
19.	S.E.	ditto.	Fair, with sunshine, but rather cold.
20.	Cble.	ditto.	Fair, with sunshine, rather frosty and cold.
21.	E.	ditto.	Fair, with sunshine, cold through the day.
22.	E.	ditto.	Fair, but dull and cold.
23.	W.	high.	Fair, with sunshine, and mild for the day.
24.	W.	very high.	Fair, but dull and cold forenoon, heavy rain afternoon, showers night.
25.	W.	moderate.	Fair, with sunshine, and mild.
26.	S.W.	ditto.	Fair, with sunshine forenoon, a slight shower of rain afternoon.
27.	W.	ditto.	Fair, with some sunshine forenoon, cold night.
28.	W.	ditto.	Fair, with sunshine forenoon, and mild.
29.	W.	ditto.	Fair, but very dull and cold, rain through night.

For the following minute and accurate thermometric and barometric notations, I have also to express my obligations to Professor Wallace. They were obtained by him from Mr Adie, the distinguished optician.

TABLE extracted from the Meteorological Journal kept by Mr A. ADIE, Optician. The Observations were made at his house, 9, Regent Terrace, Edinburgh.

Day of Month.	JANUARY.					FEBRUARY					MARCH.				
	Thermo.		Barometer.		Rain.	Thermo.		Barometer.		Rain.	Thermo.		Barometer.		Rain.
	Mo.	Ev.	Mo.	Ev.	Inch.	Mo.	Ev.	Mo.	Ev.	Inch.	Mo.	Ev.	Mo.	Ev.	Inch.
1	38	30	29.98	29.98		38	38	29.12	28.76		41	36	30.00	30.07	
2	30	28	99	73	.03	38	33	28.80	75		42	43	02	29.92	
3	32	31	70	64		38	47	29.06	95	.03	48	37	29.65	82	
4	32	30	44	36		45	47	30	29.28	.76	43	44	57	20	.07
5	30	27	42	46		43	49	28	28	.09	43	45	50	57	
6	32	35	43	43		49	41	28	53	.16	41	36	28.81	28.76	.18
7	37	40	44	31		40	40	73	91		41	31	90	29.15	
8	40	38	33	39		47	45	90	30.01	.21	41	35	29.37	65	
9	38	39	35	15		42	37	30.15	36		41	42	83	96	
10	39	39	26	42		41	42	38	37		50	49	97	87	
11	36	39	33	50		42	39	25	12		50	39	87	95	
12	39	40	50	43	.22	39	38	07	18		41	42	87	59	
13	40	35	60	90	.08	40	38	12	29.98		43	42	47	32	
14	39	37	30.07	30.18		38	36	29.97	82		41	35	33	36	.06
15	45	46	08	10		45	44	73	60		41	38	56	52	.12
16	48	45	05	09		43	40	38	28		48	42	25	28.85	
17	48	43	00	29.97		42	36	66	93		38	38	23.85	76	.07
18	46	44	00	98		45	43	30.01	30.17		43	38	91	29.31	.20
19	47	44	29.92	86		42	34	28	18		44	38	29.20	07	.18
20	47	47	70	62		42	34	10	17		43	42	42	62	
21	43	44	90	90		36	33	12	08		53	46	68	71	
22	45	45	82	72		35	38	12	00		52	43	62	53	
23	49	47	79	76		47	45	29.94	29.83		43	33	50	68	
24	50	48	49	27		46	42	65	60		42	37	77	30.02	
25	42	38	30	47		36	35	83	30.15		43	41	30.01	29.92	
26	38	30	52	73	.28	35	39	30.16	01		48	44	29.89	29.71	
27	28	35	30.04	93		37	39	29.97	05		46	46	82	80	.15
28	44	42	29.83	87		42	40	30.03	06		52	46	78	85	
29	42	42	30.07	30.02		42	39	29.98	29.88	.13					
30	43	42	29.89	29.77											
31	42	41	67	35											
Sum.	1251	1211	920.91	920.41	.61	1195	1151	864.57	864.27	1.42					
Mean.	40.35	39.06	29.707	29.691		41.21	39.69	29.813	29.800						

If in other places in the island, where the disease has shown itself during the same period, similar tables have been kept, evidence will be thus afforded in how far a supposed Cholera atmosphere is affected by thermometric or barometric fluctuations. It may be thought a prejudgment of the case to say, that these will probably be about as definite as those consequent on the direction of the wind.

From all this it must be evident, that if some peculiarity existed in the atmosphere of Musselburgh, rendering its inhabitants liable to this particular disease, at least it is a peculiarity too fine to be detected in any of its sensible qualities; for with almost the same degree of temperature, humidity, force, and direction of wind, which in three weeks produced four hundred cases of Cholera at Musselburgh, no epidemic influence exhibited itself in Edinburgh, on the one hand, or in Ormiston, Pencaitland, St Clement's Wells, and other localities, on the other. This, therefore, is one step gained in our consideration of this question, regarding atmospherical influence. It proves that if Cholera Maligna propagates itself by an epidemic power, it must in some way be independent of the sensible qualities of the air. The upholders of this theory are therefore reduced to the substitution of an equally undemonstrable fantasy of their own, which they have termed a local Cholera atmosphere.

Allow, however, for the sake of argument, that such is the case, and that there is such a thing as a local Cholera atmosphere, and we shall find that the demonstration of its existence will be found to involve absurdities that would have broken the heart of Euclid. Did such exist, is it not evident, that it must be permeable by other currents of air, with which it must necessarily commix, and suffer such dilution as would render its poisonous qualities non-effective; or, at all events, too much weakened to produce specific disease; and when they became so,

whence, without being driven to the equally wild suppositions of terrestrial emanations, or a self-generative power, was fresh virulence to be derived? To suppose a stationary atmosphere, supposes an absurdity that never did, nor ever can exist; but even admitting a millstone to be "light as air," and that this is a peculiar kind of atmosphere, which can be billeted on a district for three weeks or a month, how comes it to move at last, for we see that it must move, else Cholera could never get on?

Those who would exhibit in proof the production of intermittents from marsh miasms, give none of the severity of their reasoning powers; because no epidemic whatever, arising from such miasms, or from animal exhalations, can be pointed out, where such are not produced and extended exactly in accordance with local circumstances, and instantly lose their power of infecting the human frame, when these cease to operate. Intermittents may, for example, be generated by a certain atmospherical temperature causing a long continued exhalation from woods or stagnant waters. But this atmosphere exists only to a limited extent, and accordingly operates only within a certain range. It is not moveable—*qua* an infectious atmosphere—because it derives its origin from certain effects, produced in a certain locality, from which it cannot be separated. Cut down the forest, or drain the marsh, which is the cause, and the disease, which was the effect of the unhealthy exhalations from it, ceases, and for ever.

I can conceive it possible, however, that in ill

ventilated closes and lanes, where Malignant Cholera is raging in almost every house or apartment, and where day by day, dead bodies are scattering their pestilential effluvia, that the local atmosphere may become so vitiated and impregnated with the seeds of disease, as to be capable of producing Cholera in the strongly predisposed, without the necessity of their coming at all into personal contact with the infected. I think I have seen several, nay, many illustrations; but where there is a risk of our having been deceived, it becomes us to asseverate with hesitation. The people who are generally found to inhabit closes and lanes, are not such, that on their testimony we can at all times implicitly or unhesitatingly depend; and I have found many, who, after recovery from an attack of Malignant Cholera, have asseverated that they could not have caught the infection, because they had never either come in contact with an infected person, or been under an infected threshold, and might have been thus seized upon by anti-contagionists as examples of purely sporadic disease, who yet were afterwards found, on investigating the matter, not only to have been sitting at the bedsides of the dying, but to have assisted in performing the last offices to their remains.

To return, therefore, to our observations on the atmosphere, we may certainly take it for granted, that the difference in its constitution would be at least as unappreciable between Prestonpans, and Tranent, and Musselburgh, which is four miles, as between the latter place and Edinburgh, which is six; how then

are we to account for the circumstance that Malignant Cholera was raging simultaneously in all these three places, yet not in the Scottish capital? * The question is unanswerable. But allow the assumption of a local malarious atmosphere, and the anti-contagionist will inform you, that it had not yet travelled so far westward. Be it so; it had, however, by this time travelled so far due west as Craighall, so far south-west as Dalkeith, and so far north-west as Portobello. At all these places, as well as at Prestonpans, Tranent, and Musselburgh, the disease existed contemporaneously. It is perfectly evident, therefore, that this local malarious atmosphere—local Cholera atmosphere—or whatever other name may be applied to it, must have necessarily extended over a space involving all these six places. What then is to be said of the places included in these boundaries which have never been infected at all? For in travelling from Tranent to Dalkeith, this supposed atmosphere must have passed over St Clement's Wells,

* In what other way, save by the recognition of human contagion, independently of all collateral circumstances, is it possible to account for the fact, that if you can cut off communication with the infected, you can arrest the progress of the disease? We have proofs of this, as regards a circumscribed locality, in the case of Millhill here; and as regards a more extended one, in that of Edinburgh generally.

This, I have no doubt, would be rendered more strikingly apparent, were a history of the Edinburgh earlier cases to be given to the public. Will not Dr Christison do so? From the nature of the investigations required, the subject could not be in better hands, than in those of the author of the masterly Treatise on Poisons.

Ormiston, and Cousland, because it had reached Pathhead; and must in like manner, after pervading Musselburgh, have visited Montonhall before reaching Craighall, as that place lies in the line of communication between them. Yet not one case occurred in any of these districts, not that there were no people predisposed to the disease there—not that they would not have occurred—but that steps were taken to prevent it.*

* The more I read on the subject of Asiatic Cholera, the more am I convinced that the confusion regarding its nature, which has arisen among the observers in India, is, in a great measure, to be attributed to the blending of the usual epidemic malady, formerly known under the name of Cholera Morbus, and the Cholera Asphyxia, which, although resembling it in the more prominent and external features, is quite a new and another disease. This belief will become the more strengthened, from the circumstance of the identity of the former having scarcely been recognised since the irruption of the pestilential disease, by the writers on the banks of the Ganges. Taking this view of the matter, we have a plausible explanation of the contrariety of opinion which has been evinced regarding its contagious nature. A thorough investigation of the subject would go far, I am convinced, to reconcile the incongruities of judgment between men of such general intelligence and observation.

We all know, that cases of common sporadic, or, in other words, of Epidemic Cholera, must have continued to occur in Asia as heretofore, from the dependence of that disease on sudden vicissitudes of temperature; and of the autumnal Cholera of this country I have myself seen and treated many cases, without the idea of contagion having ever entered my head, although, when one case occurred, many others were likely to follow. The very fact of the present disease being one which is independent of season, climate, or situation, is a proof of its specific and distinct nature; and a

Immediately on the breaking out of the disease at Musselburgh, I was consulted by Wm. Aitchison, Esq. younger of Drumore, about the steps which might be thought most advisable to be taken, for preserving, if possible, the extensive establishment at the St Clement's Wells Distillery from a visitation of the pestilence, which was then on either side of it, the place being nearly equidistant from Tranent, Prestonpans, and Musselburgh.

A general cleaning of the houses was immediately commenced—the walls were lime-washed, and the furniture, after being exposed to the open air, thoroughly scrubbed with soap and water. A soup kitchen was opened, and is still most liberally kept up by the Messrs Aitchison, and the necessity of habits of sobriety and cleanliness strongly enforced on all. Such workmen as had their residence in infected districts, had their wages generously continued to them, but were not allowed to come to their usual employments; and the women and children were strictly cautioned against either making their marketings in such places, or of paying unnecessary visits to them. These injunctions and orders were punctually adhered to, and the consequence has been, that not one case of Cholera has occurred among the population of St Clement's Wells, amounting to upwards of three hundred.

Nearly the same mode of management was adopted—thousand decisions of the Westminster Anti-Cholera Society, even with Drs Johnson and Sigmond both in the chair at one time, will never convince common sense to the contrary.

ed by Messrs John and James Gullan at Montouhall, a village belonging to the Earl of Wemyss, lying on the direct road between Musselburgh and Craighall, and with the same happy results. From the post-road to Dalkeith running through it, it was here, however, necessary to have occasional resort to the assistance of constabulary force, for the purpose of keeping out visitors from the infected neighbourhoods, and of conveying travellers through it.

It is thus demonstrable, then, either that there can be no such thing as a Cholera atmosphere, properly so called, or that it does not proceed in a line forward with the wind; else it would have been impossible for the anomalies just stated to have occurred. But, for a moment, admitting the gratuitous assumption of its existence, we see that Cholera travels from place to place, and that therefore the atmosphere on which it depends must have some laws of movement. Try it on this tack.

Well, then, we find it at Haddington on 17th December; at Tranent, six miles farther west, on 15th January; at Musselburgh, four miles still farther west, on 18th of the same month; and at Portobello, equidistant between Musselburgh and Edinburgh, on 12th February. It must be plain, therefore, in the first place, that its movements are not regulated by time, as it here, at one period, takes three days only to travel four miles, and then takes eight-and-twenty to travel three. Indeed, that its whimsicalities are beyond calculation, and beat those of Punch and Judy all to sticks, must be acknowledged, when we find,

that on the 1st March it is committing its ravages in Glasgow and Paisley, while not a case remains at Haddington, Tranent, or Prestonpans; yet in a few days after, while we observe it stretching on towards Greenock and Kilwinning in the west, we find that it has again got back to Haddington and Tranent in the east.

Did Malignant Cholera depend, not on human contagion, but on a specific state of the atmosphere, then it must of necessity follow, that people visiting infected districts would catch the disease, whether they visited infected dwellings, or came into contact with infected people, or not. Has such been shown to be the case? Not in one instance, so far as my enquiries have reached, and these have been general and extensive;* and yet, with the precaution of shunning infected tenements, business has been carried on, and the markets supplied as usual. As a farther confirmation, it may be added, that not one, out of the many hundreds of passengers on the mails and stage-coaches almost hourly passing through the streets of Musselburgh and Fisherrow, when forty or fifty people must at one time have been lying on sick-beds in the rows of houses on either side, has ever been reported to have caught the disease.†

* Vide Appendix, No. IV.

† While on this subject, it is worth while remarking a circumstance which happened to my partner, Mr Brown, in one of the stage-coaches between Musselburgh and Edinburgh, during the prevalence of Cholera at the former place. He found himself seated in juxtaposition with a woman, who told that she had just come

That many have attended on the sick in Malignant Cholera with immunity, is an argument which the anti-contagionist is poking in the face of the public on all occasions, and is quite of a piece with all the other reasoning on the same side of the question. A person not predisposed to Malignant Cholera—not predisposed to typhus—not predisposed to measles—not predisposed to small-pox—in short, not predisposed to any of these, is proof against their contagion, and that exactly in the ratio of the nature of the predisposing causes peculiar to each. The epidemic influence of Cholera we utterly deny, and will continue to do so, until the impossibilities we have mentioned, and many others, which, if worth while, we could mention, are explained away; and, therefore, we beg to ask, if it be not a contagious disease—not how it is possible that any should escape—but how it is possible that any should be affected? We have only to consider, who are the attendants at Cholera hospitals, and to remember that nervous agitation and alarm—in short, depressing circumstances of all kinds, are among the strongest predisposing causes to the disease. The very fact of our finding these people in such situations—and volunteers—is proof enough that nervous debility is no part of their

from the house of a relative who, on the day preceding, had been seized with the disease. To this Mr B. good-humouredly replied, “Well, if I had known so, either you or I should not have been here.” A few days after, this woman was attacked with Cholera at the Water of Leith, and removed to the Castlehill Hospital, where she died. Her name was Janet Coutts.

constitution, yet even in them, fatigue and over-exertion have occasionally brought on the disposition, and they have been found then as mortal as their neighbours. At Musselburgh, one of the surgeons caught the disease, and died, and several were seized with the premonitory symptoms; and, pray, have the surgeons and nurses at Portobello, Falkirk, Doura, Musselburgh, Tranent, Haddington, Glasgow, Paisley, Greenock, St Margaret's Hope, Dumbarton, all escaped? * No—a greater proportional number of the attendants on the sick have, in this country, as elsewhere, been subjected to the disease than, generally speaking, of any other class of the community. But this is wandering from the position taken up by the anti-contagionists, to overthrow which, it is only necessary to show, that deaths have occurred both among doctors and sick-nurses, from their communication with the infected; and this fact being established, Malignant Cholera is incontrovertibly proved to be a contagious disease. Be the number of cases three, or be they three hundred, the evidence being sufficiently authenticated that the disease was communicated, it ought to be, and is, equally conclusive. *Ex nihilo nihil fit.* †

* At Moscow, only 3 per cent of the inhabitants were attacked, while from 30 to 40 per cent of the hospital attendants were so; and of 264 medical men at St Petersburg, 25 caught the disease, and 9 died.

† Whoever wishes to enjoy the desperation to which the advocates of a bad cause, and one so extensively involving public safety, are reduced, in the face of facts and arguments which are in-

Before quitting this subject, I would briefly allude to another egregious error which has sprung out of the gratuitous assumption of a Cholera atmosphere. I allude to the idea, that a person who has visited an infected district may bring the disease with him, and die in an uninfected one; but that no one there can take the disease from him—that predisposition being dependant on epidemic causes, which are wanting. We answer by the following facts :

At the village of Doura in Ayrshire, consisting of only 170 individuals, composing 37 families, no controvertible, is referred to the number of the London Medico-Chirurgical Review for April 1832. Finding that flat contradiction will, unfortunately, not pass current for logic, and that a chain of proofs, demonstrative of the contagion of Cholera, is, day by day, lengthening out to hem them hopelessly in, they have thrown their Aristotles and Aquinases to the dogs, to try (Heaven save the simpletons !) what may be done in the way of satire. But here, too, alas ! they have only succeeded in proving that they are no legitimate descendants of Swift or Rabelais, and in shewing more teeth than intellect. The editor should turn off these penny-a-paragraph men, and beat up for a new squad ; the present are too ragged to have passed muster even in Falstaff's regiment. To scoff at the religious humiliations of Scotland, during a season of national calamity, was only to be expected from men (men !!!) who appear to be as sceptical in religion as pathology. The author hopes, however, that this pamphlet will be as pleasant to them as his last.

Per contra, I would beg to recommend to families, for distribution among their dependants and the lower orders, “ A Short Letter addressed to the Labouring Classes, &c., on the Subject of their present Visitation of Cholera, by a Friend to their best Interests.”* It may be extensively useful, in unteaching much that has been too artfully taught ; and is highly creditable alike to the head and heart of the author.

* Waugh and Innes, Edinburgh.

less than 21 cases of confirmed Cholera appeared under the following circumstances, which were substantiated to me by Messrs Cook and Allan, surgeons at Saltcoats, while lately in that part of the country; Mr Anderson, the gentleman who attended them, being still himself labouring at the time under the effects of the disease, which he had there caught.

Doura is situated in the parish of Kilwinning, about three miles from the latter place, two from Irvine, the two nearest towns, and 20 from Glasgow. It is a hamlet on the estate of Sir James Montgomery Cunninghame, and is formed of cottages, inhabited chiefly by the families of the men engaged in the neighbouring collieries. Immediately previous to the irruption of the disease, the place was in its usual state of health.

On the 20th of February, Flora Johnston, a woman aged twenty-five, arrived at the village. She had travelled on foot from Springbank, near Glasgow, where the disease was then raging. She and her husband intended to go to Kilwinning, but she was so ill by the time they reached Doura, that she could proceed no farther; and they took up their abode in the house of an acquaintance. Mr Anderson was not called till next day at four, and by ten o'clock she expired. Having seen the Cholera in Bengal, the disease was recognised by that gentleman.

Another woman, of the name of Dale, took the malady on Thursday 23d, and recovered; but the infection having been communicated to her husband, he

died on the noon of Tuesday, 28th. This man slept with, and rubbed the body of his wife, while she was ill; and his wife's sister, who had bathed her feet, and visited the grave of Flora Johnston, having exhibited symptoms of the disease on Monday, died on the same day. Andrew Hunter, a man of sixty-two, took it on Sunday, and died on that day also. Mrs Stewart, a woman of eighty, who had been for two years deranged in her mind, was seized on Monday morning, and died on Wednesday. John Wallace, a young man who made the coffin for Flora Johnston, and assisted in placing her body within it, was seized almost instantaneously, but, after a violent attack, recovered. Mary Dick, who lived in the house at which Flora Johnston called for lodgings, while labouring under the disease, and which is in a line with those of Hunter and Mrs Stewart, was the last sufferer in the village. She was seized on 9th of March, and died in fourteen hours.

How is either the doctrine of a local Cholera, or the assertion founded on that phantasma, to be reconciled with facts like these? A woman travelling from an infected district carries the disease with her, through a line of healthy country, to a village twenty miles distant. No case of Malignant Cholera existed anywhere around; yet, within a fortnight from this occurrence, twenty-one cases of the disease, from the seeds thus sown, sprung out of the bosom of only thirty-seven families. The woman herself dies, and the doctor who attends her—the woman who acts as sick-nurse—the person to whose house

she comes—and the undertaker who puts her into her coffin, all catch the infection.

I shall only mention another illustration, communicated to me by one of my most valued friends, Mr Robert Macnish of Glasgow, the distinguished author of the *Philosophy of Sleep*, and *Anatomy of Drunkenness*. It is in a girl of the name of Gallie, residing in the village of Woodside, about a mile and a half from that city, who, during the recent irruption of the Cholera there, was attacked by the disease and died. The remainder of the family, with the view of escaping to a healthy district, left the village, and removed to Marlborough Street, Calton; but the malady, which had not previously existed in that street, immediately showed itself in the very close where the family had sought an asylum. Four in the family were seized with the disease—the father and two daughters falling victims to it; and in the same close, another fatal case shortly afterwards occurred.

Indeed, to go on specifying, where illustrations are “as thick as blackberries,” and may be taken from the pages of the writings of the anti-contagionists at Sunderland, Newcastle, Newburn, Haddington, Edinburgh, Glasgow, and Greenock, to prove directly the opposite of what the authors intended—would be an endless and might be considered an envious task. Truth will not change its nature, and become error, from investigation; but, the more that it is probed into, and searched after, “will shine with more and more light, even unto the perfect day.”

As to the sporadic appearance of Malignant Cholera, I have once and again expressed my utter scepticism ; and am convinced, from the nature of the disease, as well as the evidence of facts, that it is a thing about as likely to occur, as the sporadic appearance of small-pox or measles. If I find that B, labouring under the disease, is visited by C, and communicates it to him ; that C, under the same circumstances, is visited by D, and communicates it to him ; and that D infects E, and so on *seriatim* ; what, I would ask, is the reasonable inference ? Is it that the disease broke out sporadically in B, or that he caught it from an antecedent person A.

Or, to apply the same reasoning to facts, which came under my own observation of the disease, when there could be no chance of fallacy from the jumbling of cases.—Charles Webster, a weaver in Bridge End, was seized with Cholera on the morning of Thursday, 19th January. No other case had by the time manifested itself on the Fisherrow side of the Esk, and he died, I believe, that same evening. During his illness he was visited by Mrs Curtis, the wife of a gardener residing at 'Tod's Bridge, Musselburgh—the disease not existing, at the period of her visit, in that neighbourhood. She also died on the following day.

During her illness, Mrs Curtis was visited by Mrs Taylor, residing in Millhill—no case existing at the time in the vicinity of her dwelling, which is a large isolated house, occupied by three families.

From Charles Webster having died, and from its not being known by his wife where he may have

been sauntering for the week preceding his attack—for he was a weaver out of employment, and, when seized with the more serious symptoms of the disease, was idling away his leisure in picking out the weeds from his spot of family burial ground in the church-yard—it is consequently impossible to make that investigation into his case which could have been wished. But if we find on evidence not to be controverted, that he infected Mrs Curtis, and that Mrs Curtis infected Mrs Taylor, whether are we led to believe by the doctrines of probability, or, in a word, by the dictates of common sense, that the disease broke out in his case without communication, or that he derived it from some other person, with whom he had come accidentally into contact ?

It by no means happens that what cannot be directly proved in every case does not exist in any ; yet this *non sequitur* position is one from which the anti-contagionist is continually venturing to reason ; and by applying the mode of argument just used to the cases now mentioned, the principle of contagion is demonstrated nearly to a moral certainty. For, allow that there are thirty people in the close where Charles Webster dwelt, and yet that the disease chanced to fix, *sua sponte*, on him, in preference to any of the other twenty-nine, none of whom had been in contact with the infected ; and if of the thirty people inhabiting the close in which Mrs Curtis dwelt, none of whom had been in contact with the infected, she alone should be attacked who had been so—while the same positions equally apply to Mrs Taylor and her

neighbourhood—does it not follow that there are ninety chances to one that Charles Webster took his disease, not sporadically, but by infection?

No greater proof of the accuracy of the views which we are now laying down, regarding the propagation of Cholera, is any where to be found, than when we turn to its appearance on board of ship. The fact is a remarkable one, that the observers of Malignant Cholera in great towns are much more apt to be anti-contagionists than those in small ones; simply from the circumstance, that, in the former, from the general commixture in society, it is almost impossible to trace out the sources of individual infection; whereas, in the latter, the cases stand more apart, and ampler opportunities are afforded for more minute and accurate investigation. This is even more strikingly the case on ship-board—and the human contagion of Cholera Maligna, were almost all other corroborating evidences wanting, might be demonstrated from the fact, that no vessel arriving from a long voyage ever had a case on board before that vessel had communication with the shore. Where then is the operation of an epidemic influence,—and how is this fact to be answered? Not, surely, by controverting it, by a quotation of distant and doubtful occurrences, when, for the last six months, we have had ample opportunities of sifting the matter, under corresponding aspects here.

The disease not being in Leith, and not being in London, how many were taken up by sea, infected here; or brought down by sea, infected there? All

might have been eaten without an anti-contagionist being mistaken for an Anthropophagus. But when a vessel sails from Leith healthy to London infected, what does she bring home with her? Let the following particulars, regarding two of the smacks employed in the communication between these two places, and which have been authenticated to me by a friend in Leith, serve as a sample.

The brig *Trusty* left London on Sunday, the 4th March, and on the following morning, at two o'clock, Donald Beaton, the cook, was seized with Cholera, of which he died on Wednesday afternoon, after an illness of thirty-six hours. The vessel arrived in Leith Roads about eight o'clock on the evening of Thursday, the 8th, when two of the sailors went ashore, as far as was then known, in their usual health. Shortly afterwards, however, the wife of one of them came to the ship to inform the master that her husband could not go on board again, as he had been taken ill; he died next day at twelve o'clock. In this case the disease must have been extremely virulent, as not only had this man been at the helm, when the vessel was being brought up to the Roads, but, after that, had pulled ashore the boat with the passengers. The other man was taken to the Cholera Hospital, where he recovered.

The *Trusty* was sent up to perform quarantine at St Margaret's Hope, and four of the crew died there; three in the state of collapse, and one in the consecutive fever. A porter, who went aboard at the Roads, and was in consequence obliged to proceed up

with her to the Hope, died there after an illness of nine hours. An hospital-assistant, who had much communication with these cases, also died. So we thus see that six persons connected with the Trusty died after her arrival at the station. On the authority of the master it is stated, that all the crew were more or less subjected to the premonitory symptoms.

The name of the other smack alluded to is the Abercromby. She sailed from London on the 15th March ; and, on the following day, two of her crew, Keith Black, and William Carfrae, were seized with Cholera nearly about the same time. Both died after twelve or fourteen hours illness. None of the rest of the crew or passengers were ill, save one of the latter with typhus.*

Before concluding the consideration of the supposed influence of epidemic causes on Malignant Cholera, it may be deemed necessary to advert, at least for one moment—for the matter is worth no more—to the desperate effort made by the anti-contagionists to lug in the unconscious quadrupeds to a fellow-suffering with the human race in this disease. Really, this is too ludicrous for serious consideration ; and must have originally suggested itself to some visionary, with his imaginative bump as large as a Swedish turnip. Woe to the living races of India ! Cholera

* “ There is no instance on record of a ship from Europe having a single case of Cholera on board until it had communicated with the land ; but there are many examples of the disease appearing on board of ships sailing from the continent of India.”—SCOTT'S *Reports*, p. 38.

came like the simoom, making all bow before it. Tigers and tailors ; cats, cattle, and cadets ; dogs, ducks, and dragoons ; mice, monkeys, and men, all chimed in " with apt alliteration's artful aid" to make parties in one grand joint-stock company. It was, however, impossible for some to get through with their parts. Bucephalus Asphyxius, for instance, was thrown out when he came to the vomiting department of the matter, and he was then found to be only an impostor in the bots ;—the cow had colicked on clover ;—and madam mouse, who, disdainng to imitate old Cardinal Beaufort, " died and made the sign," with a convulsive kick, was found, by the coroner, to have made an unguarded supper on arsenic and oatmeal.*

* " The stories circulated about the deleterious effects of the ' choleric constitution' upon animals," says the distinguished Becker, " are also gravely brought forward by some persons. Birds and fish are apparently destined, along with the human species, to suffer from this capricious poison floating in the air, and proving injurious to no other part of the creation. The fowls die in great numbers about the time when Cholera appears in a town, or even two, three, or six months before (for the Cholera miasma reconnoitres for some time before it comes with its main force). The sparrows disappear from the streets and roofs of the houses. Lakes, ponds, and rivers, are found full of dead fish in choleric districts ; even the sea, in the neighbourhood of the pestilence, rejects its poisoned inhabitants. These stories are transmitted from one country and town to another ; and it would appear, that the Cholera necessarily carries along with it certain falsehoods, some of them, indeed, such as the plot laid by the physicians to poison the people, calculated for circulation among the lower ranks ; others, however, such as the above zoological novelties, for the edification of the *soi-disant* educated classes, and for the instruction of medical enquirers."—*Letters*, p. 25.

An attempt, on another tack, has been made to mislead the public mind, by the anti-contagionist assuming for a fact what must have been only his own fancy, that the chief medical authorities, wherever the Malignant Cholera has hitherto appeared, are hostile to the supposition of its contagious nature. So directly opposed, however, is this assumption to the truth, that, even in India, where the great body of practitioners seem to have been completely bewildered by the breaking out of a new, rapid, and most formidable disease, and where most of them who wrote on the subject unfortunately came to general conclusions before they had opportunities of balancing facts, the weight of authority leans decidedly in favour of contagion. Mr Orton, the author of the most complete and systematic work on Indian Cholera which we at present possess, after a scrupulous balancing of facts and observations, is obliged at last to admit the doctrine of contagion, however reluctantly;* and, not to

* "*The disease is contagious; that is, it is conveyed either mediately, or immediately, from person to person.*"—p. 313.

"The obvious inference from all these facts, and which can alone reconcile their contradictions, *that the morbid virus is of a most subtle and active nature, so that the atmosphere around the sick is quickly contaminated by it to a considerable distance, whence all who breathe such infected portions of the medium are equally liable to its influence; and when it prevails generally throughout a city, the whole surrounding mass, though not equally, is sufficiently poisoned to produce the full effect of contagion.* From this *mobility* of the virus, and from the disease almost immediately following its application, it is enabled to spread with a rapidity which, excepting in the instances of the sweating sickness and influenza, appears to be unparalleled in the history of epidemics, and every

produce a catalogue of individual writers, we need only refer to the able volume of Dr Kennedy, who, after analyzing no less than thirty-seven Asiatic treatises on the subject, arrives also at the same conclusion.* The highest civil authorities† on the sub-

where to strike its invisible but deadly blow where it is not warded off by insusceptibility; whilst in the great mass of people, who happily are thus guarded, probably the morbid secretions may be rubbed into the mouths of the absorbent vessels on the surface—or the effluvia arising from them inhaled into the lungs—or they may be taken into the stomach—or even inserted into the open veins, without adding to the danger.”—p. 328. *Essay on Epidemic Cholera, Ed. 2d.*

* The History of the Contagious Cholera; with facts explanatory of its laws. 1831.

† “It is worthy of remark,” says the Rev. Mr Gleig, “that to this dire disease, Sir Thomas Munro had, at different times, devoted much of his attention. It broke out in his camp during the southern Mahratta war, and, being still unsubdued when he resigned his command, he requested a young friend, whom he left behind, to keep him regularly acquainted with its progress; and the result of all his observations, was to impress him with a conviction, that it was decidedly contagious in its nature.”—*Life of Sir Thomas Munro*, vol. ii. p. 202.

Sir Thomas was himself destined to fall a victim to the disease, and these were his dying words, which ought to impress those who are too fond of leaping to conclusions:

“As the day advanced the illustrious patient became gradually worse, yet neither anxiety nor alarm was perceptible in his own countenance or proceedings. He spoke with perfect calmness and collectedness; assured his friends that he had frequently been as ill before; regretted the trouble he occasioned to those about him, and entreated them to quit the tent. ‘This is not fair,’ said he, ‘to keep you in an infected chamber;’ and when told that no apprehensions were entertained, because there was no risk of infection,

ject that can be quoted, those of the truly great Sir Thomas Munro, and of Sir John Malcolm, will have their weight, and deservedly ought to have, with all who, amid the cavillings of medical men, have hesitated to form conclusions for themselves.

In Russia, we find Sir William Crichton, physician in ordinary to the Emperor;* Dr Doepp, director in chief of the Imperial Foundling Hospital;† and Professor Lichenstadt of St Petersburg, the compiler of the official reports detailing the progress of Malignant Cholera from Asia to Europe, all decided contagionists;‡ and in Prussia, both Dr Becker, one of the highest names in contemporary medical literature,§ and Dr Albers, the gentleman sent at

he repeated his usual observation—‘ That point has not been determined; you had better be on the safe side, and leave me.’”—p. 204.

* The Medical Council of St Petersburg decided, “ that the exciting cause of Cholera (and the only one well proved) is a specific contagion, less virulent perhaps than that of the plague, and requiring a certain predisposition in the human body for its development, but which contagion certainly exists; numerous proofs of this fact were presented by the epidemic of 1829 and 1830,—

“ From, 1st. The progress of Cholera along the high-roads.

“ 2d. The remarkable circumstance, that *the first who died of it, wherever it appeared, were individuals who arrived from some infected place,*” &c. &c.

† Vide Appendix, No. I. to Official Reports transmitted to Government by Drs Russel and Barry, p. 144–7.

‡ “ Die Asiatische Cholera in Russland, in den Jahren 1829–30, nach Russischen Quellen bearbeitet.”

§ The author begs most strenuously to direct the attention of the reader, whether medical or non-medical, to Dr Becker’s “ Let-

the head of the commission to investigate the nature of the disease at Moscow. And what side of the question, it may be triumphantly asked, has been espoused by Delpech* and Moreau de Jonnès, in France,†—by Halford, Macmichael, and Copland, as

ters on the Cholera in Prussia" (Murray, London, 1832), as the most philosophical and conclusive exposition of the controversy regarding the contagion of this disease, which has yet been given to the public. When these letters are answered, the anti-contagionists may shout, "Io triumphe!" but not till then.

* Vide Cholera Gazette, No. III. I shall ever remember with pleasure the interesting conversations on the subject of the contagion of Cholera, which I had with Dr Coste of Montpellier, who accompanied M. Delpech to Scotland. The general facts were too palpable and striking for a mind like his to resist; but, along with human communication, he considered a certain galvanic or electric state of the atmosphere necessary for the propagation of the disease. In this we of course could not agree.

† Rapport au Conseil superieur de Santé, sur le Cholera Morbus, pestilentiel. Par Alex. Moreau de Jonnès, Membre et Rapporteur du Conseil. Paris, 1831.

As another illustration of the absurd and ridiculous precipitancy with which men have ventured to hazard conclusions regarding the nature of this new and terrible disease, may be mentioned the circumstance of Magendie, and eleven other people, having signed a confession as to their faith in its non-contagion, before the pestilence had been three days in Paris!! What protracted and careful investigations these philosophers must have made before their deliberations thus ended! The Council of Trent must have been a joke to their adjournments. Nothing is new under the sun. The French physicians who visited Marseilles in 1720, declared the Plague not contagious, and so would many people yet, if they dared swear that black was the colour of a swan, and white of a crow, without being laughed at for their peculiar philosophy.

well as by Russel, Barry, and Keir, in London; and by Abercrombie, Thomson, Alison, Christison, and Gregory, in Edinburgh? When, in any of these countries, higher authorities than these can be adduced in opposition, it will be time enough to consider the question of the human communicability of Malignant Cholera as settled in the negative.

A P P E N D I X.

No. I.

As the opinions of the medical world still appear to continue as divided regarding the treatment of Malignant Cholera, as regarding its nature, it is only by the comparative success of different modes that any legitimate conclusions on the point can be arrived at.

The following is the general summary of the cases of Malignant Cholera, as connected with Musselburgh, first district, treated by Mr Brown and self, from 19th January to 14th March 1832. No account has been kept of the numbers who applied for advice, and were prescribed for while the disease was in its premonitory stage.

Number of men,	16
of boys,	5
	<hr/>
	21 males.

Number of women,	35
of girls,	4
	<hr/>
	39 females.

Number of deaths, 19
of cures, 41

Total number of cases, 60.

The 4th, 12th, 35th, 56th, and 59th cases, were moribund when seen. Two died in the consecutive fever.

These cases are exclusive of those removed to Hospital from same district.

In the management of the whole of these cases, Cholera Maligna was viewed as a disease of debility, and consequently a stimulating and cordial plan alone resorted to. For the particulars and details, the reader is referred to Mr Brown's Letter to the Central Board of Health, second edition; and to the author's Practical Observations on Malignant Cholera, second edition, Appendix of Cases, p. 54-69.

To those who are sceptical regarding our visitation with a new and fatal disease, as also to those who maintain that the average mortality is not increased where Malignant Cholera appears, the following may be not uninteresting.

Comparative mortality of January, February, and March, in the parish of Inveresk, for the years 1829-30-31.

1829,	44	}	General average 33.
1830,	29		
1831,	26		

From first Cholera funeral, 19th January, 1832, to 19th March—two months—282.

Total mortality of parish for the year 1829, 181
for the year 1830, 167
for the year 1831, 180

General average of mortality in parish of Inveresk for the three years preceding the appearance of Cholera, 176.

We thus see that in two months the number of deaths exceeded the annual average mortality by 106.

No. II.

In October last, on the first appearance of Cholera in England, a very ingenious little paper was circulated by Lieut.-Col. Rowles, E.I.C.S., Cheltenham, whose object was to show that the propagation of Malignant Cholera was by pestilential emanations from the dead body. That gentleman has kindly favoured me with the following MS. addenda to it. For answers to the queries which he there proposes, I beg to refer him to the facts in the first division of this pamphlet.

“It is argued,” says the Colonel, “that the Cholera is carried by the atmosphere; but the question is, how does it get into the atmosphere? It emanates from the dead bodies of its victims, in the progress of their putrefaction. This is the source whence it is furnished to the atmosphere. In Sunderland, and in its vicinity, many bodies, instead of being buried in twelve hours as directed, were kept for several days; in fact, till putrefaction was too far advanced for them to be possibly kept any longer.

“What prevents any place, or all England, being considered as one great ship? The bodies being effectually disposed of immediately after death, the spread of the disease would be prevented. Destruction by fire is the only effectual resource, and to this we must come sooner or later: May it be, before our burying-grounds have become so many *nuclei* of the pestilence!

“Unfortunately, even in India, the custom of burning the dead is not universal. Mahomedans, Christians, and many Indians do not burn, but only bury the dead. Camp-followers are too often left unburied altogether,

whence the extraordinary havoc of the disorder in camps *any time stationary*. A single body regenerating the poison, its germ may be carried by the atmosphere, and so dispersed as to cause extensive mischief.

“Can it be unequivocally shown, that Cholera has been propagated in any instance, where there has not been exposure to the effluvia of the dead body, as well as during life?”

“The instances given of the apparent taking of the disease from attendance on the sick, or communication with them, all involve doubt. In the first place, as to the services rendered to the dead body by the same persons who were in communication during life. Next, it is to be recollected, that the effluvia arising from a dead body create a miasm, or pestilential virus, floating in the air, and liable to be retained a long time in close rooms; and if not destroyed by fumigation, but merely driven from them by ventilation, liable to be wafted on the atmosphere, till it settles in some more or less contiguous places: accordingly, it has been remarked, that each *cholera-dead* has formed a kind of nucleus, around which the disorder has spread. Indeed, we have the presumption, when we see it spread as well against the wind as with it, that the poison possesses within itself a power of locomotion, indicating its animated character: this seems further probable, from the manner in which it has been observed to fall in India, the line of its ravages correctly marked like that of a swarm of locusts, or like that of those swarms of minute insects constituting vegetable blights. Nor may be undeserving of attention, its habit of selecting damp places, and the neighbourhood of water, like musquittoes or gnats; and its choice of its victims, chiefly among those, by the peculiar odour of whose persons it may be supposed to be attracted, as by that of the cadaverous-smelling drunkard, of the debilitated, and of those who habitually neglect cleanliness.

“ *Queries.*—Are not the burying-grounds the preserving receptacles of plague, small-pox, scarlet-fever, and other pestilential disorders? Might not those diseases be annihilated by some other disposal of the dead?”

The following passages from the printed essay are curious.

“ Cholera has followed the course of rivers and of the great roads; it has followed the march of armies through every variety of climate, of season, and of soil; it cannot have been every where an immediate poisonous exhalation from the earth, however such may be represented to have been its local origin. The specific poison, or miasma, is evidently renewed from the victims whose paths it has followed.

“ It has been observed in India to follow the march of battalions; these battalions, themselves, after a certain time, generally about three weeks, ceasing to be infected; but it has broken out, a little sooner or later, in every place where they halted and left their dead.

“ Cholera has often shown itself in ships a short time after their leaving India: the persons attacked had come on board infected. After their death, the bodies, according to naval usage, being speedily committed to the ocean, the disorder has not been further communicated, but has ceased, and the ships have remained healthy.

“ Lord Hastings’ army in India, after losing 6000 men in a few days, changing its ground, got out of reach of the emanations from its own dead, and the disease was got under.

“ In Russia and Poland, as in Asia, wherever armies have passed, and, as is too often the case, have left some of their dead unburied, the disorder has broken out with a marked energy.”

On the subject of the propriety, at all events, of speedily interring the bodies of those who fall victims to Ma-

lignant Cholera, there ought to be little division of opinion, whether we regard the comfort or the safety of the living. I would beg to refer the reader to some sensible and well written letters on this subject by Dr E. D. Alison, originally published in the North Briton newspaper.

No. III.

Unfortunately, the foregoing sheets were at press before the following Tables of the weather, made at Glasgow, and for which I am indebted to the unwearied kindness of my friend Mr R. M'Nish, came to hand. As it is only by comparison of notations made in different places that the independence of Malignant Cholera on atmospheric changes can be demonstrated, I quote the Table for January. Of its correctness there can be no doubt, as it was kept under the management of Professor Heron.

TABLE of the Weather kept at the Andersonian University, Glasgow, for
January 1832.

Day of Month.	BAROMETER.		THERMOMETER.			THERMOMETER.			RAIN GAUGE.		WIND.		
	9½ a.m.	9½ p.m.	Cold. 9½ a.m.	Heat.	Mean.	9½ a.m.	9½ p.m.	Mean.	9½ a.m.	9½ p.m.			
1	30.02	30.30	40	41	40.5	40	35	37.5			SE.	Calm.	a.m. } overcast. p.m. }
2	29.93	29.82	34	35	34.5	35	32	33.5		.20	SE.	Calm.	a.m. } overcast. p.m. }
3	29.95	29.98	34	36	35	36	33	34.5			SE.	Calm.	a.m. } overcast. p.m. }
4	29.50	29.43	32	34	33	34	34	34			E.	Calm.	a.m. } overcast and p.m. } snow.
5	29.48	29.50	30	31	30.5	30	31	30.5			E.	Calm.	a.m. } overcast. p.m. }
6	29.50	29.48	26	36	31	28	35	31.5			E.	Calm.	a.m. } cloudy. p.m. }
7	29.43	29.42	37	40	38.5	39	39	39			ESE.	Calm.	a.m. } overcast. p.m. }
8	29.35	29.43	39	41	40	40	39	39.5			ENE.	Calm.	a.m. } overcast. p.m. }
9	29.375	29.20	39	42	40.5	40	40	40			E.	Calm.	a.m. } overcast. p.m. }
10	29.34	29.46	38	41	39.5	39	40	39.5	1.20	2.24	ESE.		a.m. } cloudy. p.m. }
11	29.40	29.51	37	40	38.5	38	40	39		3.75	E.		
12	29.59	29.58	36	42	39	40	40	40			NE.		
13	29.70	29.97	38	40	39	40	37	38.5		4.75	SE.		
14	30.10	30.26	37	40	38.5	39	36	37.5			E.		a.m. } cloudy. p.m. }
15	30.17	30.17	36	45	40.5	45	45	45			SW.	Faint breeze.	a.m. } overcast. p.m. }
16	30.17	30.17	45	47	46	47	47	47			SW.	Light wind.	a.m. } overcast. p.m. }
17	30.13	30.05	45	48	46.5	47	44	45.5					
18	30.05	30.05	43	43	43	45	45	45			SW.		a.m. } foggy. p.m. }
19	29.98	29.94	43	49	46	47	47	47			NE.	Faint breeze.	a.m. } overcast. p.m. }
20	29.94	29.75	43	50	46.5	48	48	48			SW.	Light breeze.	a.m. } cloudy. p.m. }
21	29.99	29.90	44	50	47	47	47	47			SW.	Light wind.	a.m. } overcast. p.m. }
22	29.83	29.84	43	47	45	45	47	46			SE.	Light wind.	
23	29.87	29.80	45	50	47.5	49	48	48.5	5.74		SSW.	Faint breeze.	a.m. } overcast. p.m. }
24	29.56	29.52	48	51	49.5	50	42	46			SSW.	Brisk gale.	a.m. } cloudy. p.m. }
25	29.47	29.53	39	51	45	42	39	40.5	6.14		WSW.	Light wind.	a.m. } cloudy. p.m. }
26	29.60	29.92	39	43	41	40	30	35		6.38	SW.	Light wind.	a.m. } overcast. p.m. } snow about 3 in.
27	30.13	30.03	20	40	30	21	40	30.5			SE.	Calm.	a.m. } overcast. p.m. }
28	29.94	29.96	40	48	44	47	46	46.5	8.62		W.	Light wind.	a.m. } cloudy. p.m. }
29	30.19	30.21	41	43	42	42	39	40.5			NW.	Calm.	a.m. } clear. p.m. }
30	29.96	29.83	38	46	42	46	40	43			W.		a.m. } cloudy. p.m. }
31	29.75	29.46	38	44	41	43	42	42.5			SW.		a.m. } overcast. p.m. }

I have also had the satisfaction of perusing, and comparing with the foregoing, tables of the weather, kept by James Ewing, Esq. of Garvel-Bank, near Glasgow, in like manner obtained for me by Mr M'Nish, and which fully coincide with the others. To Professor Heron and Mr Ewing, the author here returns his best thanks.

No. IV.

Having proved that Malignant Cholera has been communicated by the infected to the uninfected, and expressed my reasons for believing, that this was accomplished solely by human communication, and not at all dependant on epidemic causes, I have only to add, in confirmation of the facts already laid down, and which I could greatly extend from others, which have been forwarded to me within the last week, from practitioners in various parts of the country, were farther proof at all necessary, that I have made general enquiries around this particular locality, for the elucidation of the only other point, connected with the contagion of Cholera, which seems to require examination, viz —

“ Whether people coming from healthy districts, and visiting infected ones, without entering infected houses, have ever caught the disease ? ”

Not one case, from among the many hundreds visiting Musselburgh, under these circumstances, has yet occurred. How will the anti-contagionists establish their Cholera atmosphere next ? Not by facts, for by these they are overborne, and routed from every position they have ventured to take up, with the merry-andrew of Johnson's Philosophical Miscellany somersetting in the van. What their forlorn-hope rallying point is to be, is not to be guessed ; for they have wisely withdrawn themselves within a cloud

of misty metaphysics, unless it be, that Cholera Asphyxia is by no manner of means more contagious than either Plague or Typhus. It were well, however, that this were understood, and that the advocates of non-contagion would make at once a clean bosom of it, for we can sincerely assure them, that the merits of their cause is, just at this time, in no way appreciated by the common sense of mankind. In Paris, their doctrines have received "ample room and verge enough" for display; but it would appear, that nowhere are they to have their due reward, for the seed they have there so industriously sown, has already been partly reaped by the wine venders. *Nous verrons.*

I shall only give in proof of what has been just advanced, a list obtained from the single locality of St Clement's Wells, in which, although within two miles of Tranent, two of Musselburgh, and three of Dalkeith, no case of Malignant Cholera has ever occurred. Be it remembered, that every one was strictly enjoined not to enter houses, where infection was known to exist.

1831. Dec. 17, Mr Lauder to Haddington.

— 19, Archibald Ferguson and five men, ditto.

— 23, Mr Lauder and six men, ditto.

— 27, J. Livingstone, ditto.

— 30, Mr Lauder and one man, ditto.

— 31, James Ross and seven men, ditto.

1832. Jan. 2, Robert Ferguson and three men, ditto.

— 3, Ditto, and six men, ditto.

— 4, Ditto, and seven men, ditto.

— 6, Hugh White and seven men, ditto.

— 7, William Wright and seven men, ditto.

— 13, Hugh White and four men, ditto.

— 14, Mr Lauder.

— „ Adam Blair at Fisherrow.

— „ Arch. and Robert Ferguson, ditto and Musselburgh.

— 18, Hugh White, ditto, ditto.

— „ Robert Ferguson, ditto, ditto.

— 20, Robert Ferguson, ditto, ditto.

- Jan. 20, Neil Cunningham, Fisherrow.
 — 21, Robert Ferguson, ditto.
 — 24, Robert Ferguson, ditto.
 — 28, Robert Ferguson, ditto.
 Feb. 4, Hugh White, ditto.

Besides the above were John Lowe, residing at Grove Street, Musselburgh, who went daily to work at St Clement's Wells, and delivered parcels from that place, both in Musselburgh and Fisherrow, evening after evening.

2. William Purdie, residing at Tranent, and going thence daily to work at St Clement's Wells. His house was beyond the Cholera Hospital, whose door he had thus to pass both in coming and going.

3. Peter Bisset, daily at Post-office, Musselburgh, from the 4th of February, till cessation of the Cholera there.

4. John Moodie, from the breaking out of the disease till the 4th of February. This boy was in delicate health, and apparently strongly predisposed. He was just recovering from the emaciation consequent on a large abscess, behind the pubal insertion of the abdominal muscles, and has since had an attack of hemoptisis.

Materials lie around me to accumulate this list to an unlimited extent, but to swell it out were useless. All who are worth convincing must be already convinced, and those who are not are welcome to their opinions. Time will put every thing to rights; although it can never restore the thousands of lives which must yet fall a prey to inveterate scepticism. I, for one, plead guiltless of that blood.



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