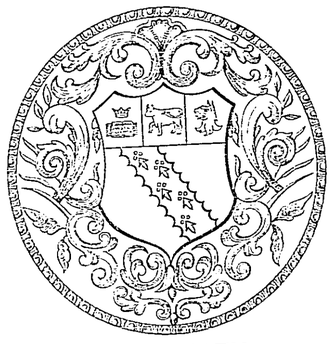
ACLAND'S MEMOIR
ON THE
CHOLERA AT OXFORD



REFERENCES TO THE AFFECTED YARDS.

ST THOMAS'

1. Robert's Yard.
2. Lamb and Flag Yard.
3. Ayres' Yard.
4. Blay's Yard.
5. Faulkner's Row.
6. Tawney's Yard.
7. Billings' Row.
8. Offwood's Row.
9. Vaughan's Yard.
10. Green's Yard.
11. Shambles of Mutton Yard.
12. Corbett's Yard.
13. Meane's Yard.

ALL SAINTS'

14. Carter's Yard.
15. Amsterdam Court.

ST MARY MAGDALENE.

16. Bound's Yard.
17. Hunney's Buildings.

ST PETER-LE-BAILEY.

18. Alder's Yard.
19. Faulkener's Row.
20. Brecklands Row.
21. Pollard's Yard.
22. Arnold's Passage.
23. Coach & Horses Yard.

ST PETER'S-IN-THE-EAST.

24. Fellers Yard.

ST PETER'S-IN-THE-EAST (cont'd)

25. Farrar's Yard.
26. Gravel Walk.

ST CLEMENT'S

27. Hitchcock's Row.

ST ALDATE'S

28. Mews' Houses.
29. Rose Court.
30. Green Dragon Yard.
31. Floyd's Row.
32. Nelson's Yard.
33. Treadwell's Gardens.
34. Shepherd's Row.
35. English's Yard.
36. Sparke's Yard.
37. Wyatt's Yard.
38. Tower's Yard.
39. Carter's Yard.
40. Pipe-maker's Yard.

ST EBBE'S

41. Speedwell Terrace.
42. Union Place.
43. Eyles' Buildings.
44. Lamb's Row.
45. Hind's Yard.
46. White's Yard.
47. Godfrey's Row.
48. Lee's Yard.
49. Mazey's Yard.

DR. AC

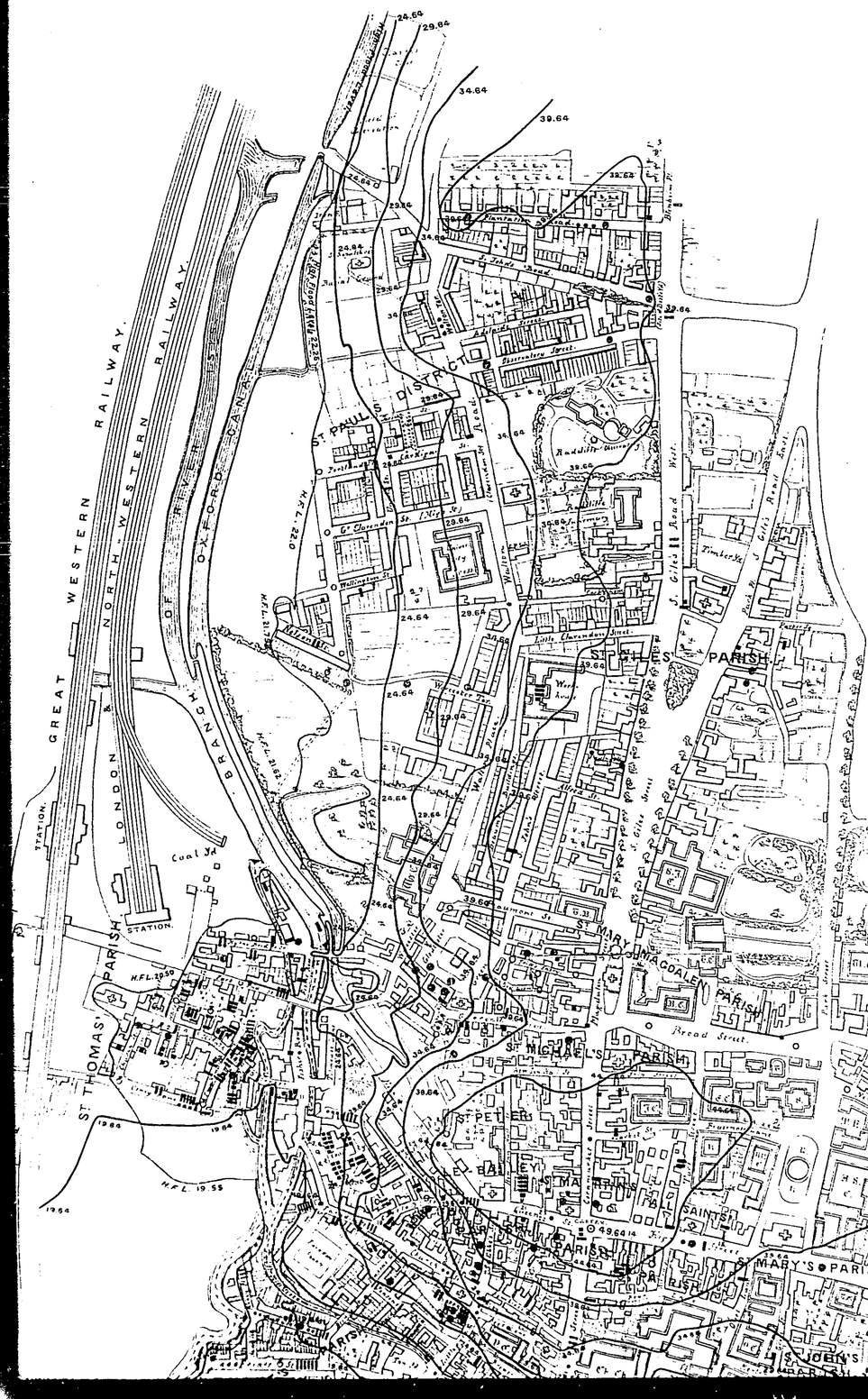
THE LOCALITIES IN

THE P
ORMEROD, G
THE PAR

THE PART

NEW HINCKSEY.

Wholly Undrained.



MAP OF OXFORD,

TO ILLUSTRATE

DR. ACLAND'S MEMOIR ON CHOLERA IN OXFORD IN 1854,

SHOWING

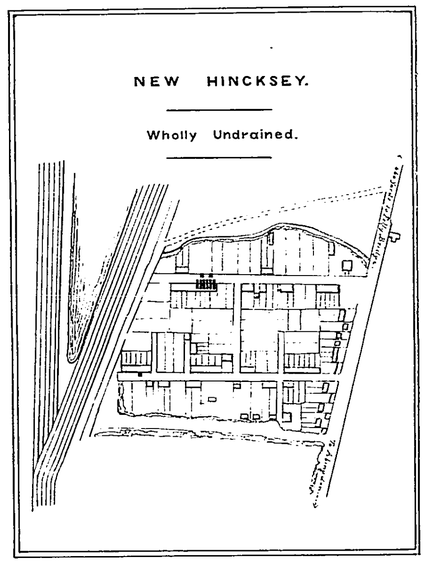
THE LOCALITIES IN WHICH CHOLERA & CHOLERAIC DIARRHŒA OCCURRED IN 1854, AND CHOLERA IN 1832 & 1849;

TOGETHER WITH

THE PARTS OF THE TOWN DESCRIBED AS UNHEALTHY. BY ORMEROD, GREENHILL & ALLEN, AND A WRITER IN THE OXFORD HERALD;
THE PARTS REMEDIED SINCE THE DATE OF THEIR DESCRIPTIONS;
THE DISTRICTS STILL UNDRAINED;
THE PARTS OF THE RIVER STILL CONTAMINATED BY SEWERS, IN 1855;
AND THE CONTOUR LEVELS.

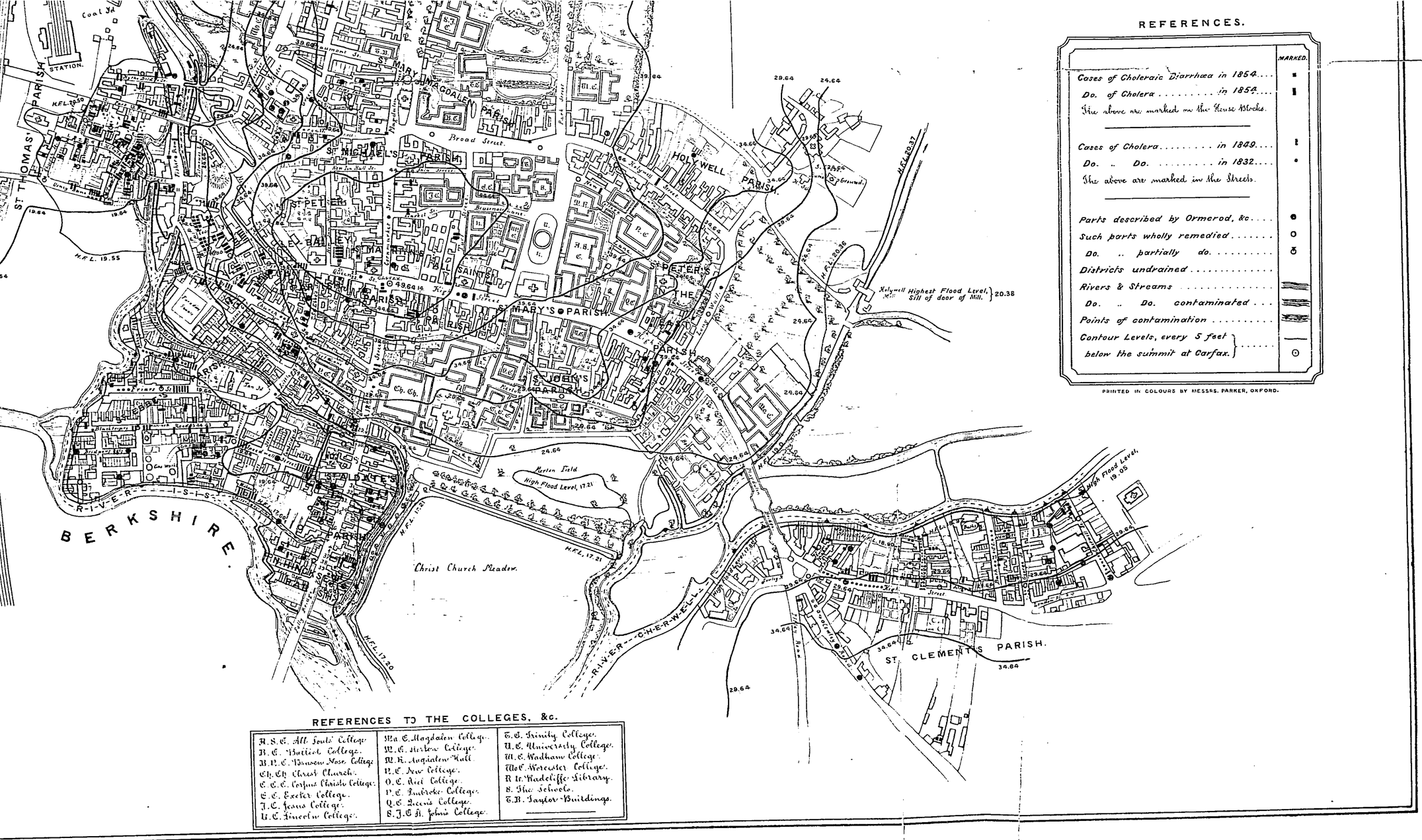
REFERENCES.

	MARKED.
Cases of Choleraic Diarrhœa in 1854	▪
Do. of Cholera ..... in 1854	▮
The above are marked on the House Blocks	
Cases of Cholera ..... in 1849	▮
Do. .. Do. ..... in 1832	•
The above are marked on the Streets	
Parts described by Ormerod, &c.	●
Such parts wholly remedied	○
Do. .. partially do.	♂
Districts undrained	
Rivers & Streams	
Do. .. Do. contaminated	
Points of contamination	
Contour Levels, every 5 feet below the summit at Carfax.	⊙



REFERENCES TO THE COLLEGES, &c.

A.S.C. All Souls' College.	Ma.C. Magdalen College.	T.C. Trinity College.
B.C. Balliol College.	M.C. Merton College.	U.C. University College.
B.N.C. Brasen Nose College.	M.H. Magdalen Hall	W.C. Wadham College.
Ch.Ch. Christ Church.	N.C. New College.	Wo.C. Worcester College.
C.C.C. Corpus Christi College.	O.C. Oriel College.	R. Ir. Radcliffe Library.
E.C. Exeter College.	P.C. Pembroke College.	S. The Schools.
J.C. Jesus College.	Q.C. Queen's College.	T.B. Taylor Buildings.
L.C. Lincoln College.	S.J.C. St. John's College.	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Do. .. Do. ..... in 1832....
The above are marked in the Streets.
Parts described by Ormerod, &c....
Such parts wholly remedied.....
Do. .. partially do. .....
Districts undrained.....
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Do. .. Do. contaminated...
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Contour Levels, every 5 feet below the summit at Carfax.
PRINTED IN COLOURS BY MESSRS. PARKER, OXFORD.
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S. The Schools.
T.B. Taylor-Buildings.
BERKSHIRE.
ST THOMAS' PARISH
ST MARY MAGDALEN PARISH
ST MICHAEL'S PARISH
HOLYWELL PARISH
ST PETER'S IN THE EAST PARISH
ST MARY'S PARISH
ST JOHN'S PARISH
ST EBBE'S PARISH
ST CLEMENT'S PARISH
Broad Street.
Holywell Highest Flood Level, Sill of door of Mill. 20.38
Marten Field High Flood Level, 17.21
Christ Church Meadow.
R-I-V-E-R C-H-E-R-W-E-L-L
R-I-V-E-R I-S-I-S
H.F.L. 17.21
H.F.L. 17.20
H.F.L. 19.55
H.F.L. 20.36
H.F.L. 20.37
High Flood Level, 19.05

J. Morrell Esq
With the Author's compliments

MEMOIR

ON THE

CHOLERA AT OXFORD,

IN THE YEAR 1854.

MEMOIR

ON THE

CHOLERA AT OXFORD,

IN THE YEAR 1854,

WITH CONSIDERATIONS SUGGESTED BY THE EPIDEMIC.

BY

HENRY WENTWORTH ACLAND.

M.D., F.R.S., F.R.G.S., &c.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS;

PHYSICIAN TO THE RADCLIFFE INFIRMARY; RADCLIFFE LIBRARIAN; AND LEE'S READER IN ANATOMY IN THE UNIVERSITY OF OXFORD.

LONDON:

JOHN CHURCHILL, NEW BURLINGTON STREET;

AND J. H. AND J. PARKER, 377, STRAND.

OXFORD: J. H. AND J. PARKER.

M.DCCC.LVI.

The chiefe Vse then in man of that he knowes,
Is his paines taking for the good of all,
Not fleshly weeping for our owne made woes,
Not laughing from a Melancholy gall,
Not hating from a soule that overflowes
With bitternesse, breath'd out from inward thrall:
"But sweetly rather to ease, loose, or binde,
"*As need requires*, this fraile fall'n humane kinde."

Yet some seeke knowledge, meerely to be knowne,
And idle Curiositie that is;
Some but to sell, not freely to bestow;
These gaine, and spend both time, and wealth amisse,
Embasing Arts, by basely deeming so;
Some to build others, which is Charity;
But these to build themselues, who wise men be.

Certaine Learned and Elegant Workes of Lord Brooke, 1633, *p.* 50.

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CHAPTER V.—*Treatment of the Disease in Oxford.*

CHAPTER VI.—*The Conclusions.*

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PART III.

THE LESSON OF THE EPIDEMIC.

CHAPTER I.—*Our Present Condition.*

CHAPTER II.—*On some Habitations in Oxford, and their Ventilation.*

CHAPTER III.—*The Drainage of Oxford.*

CHAPTER IV.—*On certain points affecting Voluntary Institutions for giving Medical Aid.*

CHAPTER V.—*On certain Relations between Moral and Physical Improvement.*

CHAPTER VI.—*The Summary.*

APPENDIX.

PLATES.

TO

SIR BENJAMIN COLLINS BRODIE, Bart., D.C.L.

&c. &c.

AND

WILLIAM PULTENEY ALISON, M.D., D.C.L.

&c. &c.

This brief Memoir on the Cholera, as it occurred in Oxford in the year 1854, is dedicated to you, not as in itself worthy of the honour of your names, but as enabling me to record a part of the debt of gratitude which I owe to you both, for your instruction during my pupillage, and your unvarying friendship from that time until now. I have lived to aid in conferring upon you in our applauding Theatre a Degree, by the acceptance of which you have added value to that honour, and have linked your names for ever with the University of Oxford. I think with satisfaction that shortly the Son of one of you will teach the highest branches of Chemical Science, where the Father of the other first thought out those principles of Mental Philosophy, that will be for ever associated with the name of Alison.

Not however for these reasons only should I have ventured to ask your indulgent patronage of this Essay; but I ask it also because, in the freedom of happy intercourse, you enjoined on me, both by precept and example, to seek daily in our common Profession other fruit besides that which is indeed its first and most precious harvest—the Healing of Disease; to seek out, and to strive to influence for good, those hidden circumstances which, more than we are aware of, affect both the physical and moral happiness of individuals, and masses of society; circumstances which it is so much the desire of the present age to discover, and to guide. I saw in your own lives, how much of self-discipline and culture, what tender but active and wisely ordered charity every occurrence of daily life may be made to bring forth. How little of what you suggested I can hope to effect, is known only to the sadness of my own heart, and the observers of my failures.

To every thoughtful Physician, such a Visitation as a Cholera Epidemic brings a torrent of deep questionings. To be placed face to face with one of the great Scourges of Man; to be forced to confront, in mass and in detail, the moral and physical evils which engender or increase Epidemic diseases in our Towns, is to be led into stern communings concerning the whole of our social and political life. Why do such evils, long known, still exist? Why is so much energy, as certainly exists in favour of all truly benevolent schemes, dormant, or misapplied? Does the moral and religious state of our people keep pace with their greater physical advantages? Are we not in danger of forgetting, in the midst of boasted material and intellectual progress, that it is as certainly true now as ever it was, that the largest part of the misery among men depends at last on moral, not on material, causes? These and many other such questions rise in the minds of Englishmen, when by social or political trial their souls are stirred within them.

Some parts of England, when the Cholera was almost at its height in 1854, were nearly as unprepared as they had been in 1849. Is it certain they will be much better when it comes again? Can it possibly be that true social progress and the wisdom of self-government are hardly compatible? or that free institutions are less safe for a people as their education advances? If it were so, must it not be that the education stumbles as it goes forward? Surely, even if it be so, it need not so be.

In Oxford — in this place of Education — many have striven, as others have striven, to add their share to the well-being of the people. It is no time for boasting, truly! But in the determination to develope a greater knowledge of the material world, among those committed to their care, they have shown that they know a way, which though long is sure. We shall certainly every year send out more of the gentry and the clergy, informed on all subjects connected with the laws of health, and so with the well-being of the people. Think what one nobleman, one country gentleman, one clergyman, wise in these respects and energetic, can effect! Think what many of the gentry and clergy have done! What one man, Lord Shaftesbury, has achieved! And then what may we not hope, when time has been given for our youths to obtain University honours for their knowledge of Chemistry, Physiology, Hygiène; and so feel the cheering glow of physical truths, as applied to the bettering of man's estate. When the Professors who teach these subjects have made their purpose felt, through the hearts and the heads of the upper classes, how much good, and content, and gratitude, may not spring up in the hearts of even the most hopeless members of the body politic.

But I return. You will excuse me for this digression, when you think how we are necessarily led to consider the very groundwork of our œconomical con-

dition, when we talk of "*preparing* for the Cholera." We all know now that the true preparation lies in the healthy life and well-ordered habits of the Community. We all know that the true management at the time requires the absolute authority of some discreet but competent power, unhampered by a routine which is proper for less urgent times. But this kind of preparation is dependent on more moral and social causes, than could be discussed within the compass of a volume; and this kind of management though the only effectual method, is too often distasteful to the people.

The result of all these considerations appears to be this; to be thankful for the great gain that has been made, and is making, in Sanitary matters; to strive more earnestly after moral, intellectual, and religious, truly religious, progress; if there be any whom we can each of us aid, to aid them as circumstances will allow us; and so, hoping to the end, to leave the rest in the hands of the Disposer and Preserver of all things.

That the general aim of these remarks will meet with your approval I do not doubt. If I could flatter myself that the pages which have called them forth could find equal indulgence at your hands, I should cherish the hope that they might prove of some advantage to the City and Counties on behalf of which they have been mainly undertaken.

I am, with the truest respect,

Your affectionate friend and servant,

HENRY W. ACLAND.

May 1st, 1856.

INTRODUCTION.

This brief Memoir on the Cholera, as it occurred in Oxford in 1854, is made public by me with a full sense of its incompleteness, and half a wish that it had not been undertaken. But I believe it to be of consequence that it should be published without further delay, if at all; and the same causes which have in part made it difficult to me to prepare it, viz. other duties, would make it nearly as difficult for me now materially to amend it. The labour of such an undertaking is far more than will be apparent to any but those accustomed to such works. Nothing but a sense of duty, and a debt of affection and gratitude to this University, City, and District, would have induced me to undergo it. It is to those fully capable of judging of such a task, that I should most willingly submit for criticism a work, undertaken as a labour of love, without any means of obtaining information or aid except such as the hearty kindness of many friends of every class of society allowed; a kindness indeed so hearty that no words of mine could express the sense which I entertain of it.

For the purpose alone of obtaining a tolerably correct list of the Cholera Cases, it has been necessary to examine the whole City at least three times; and trifling errors, which would not indeed have materially altered the general result, have required the recasting and recalculating all the Tables thrice also. If therefore any errors exist, as probably they do, they at least are not due to a lack of perseverance. Much of this labour was undertaken by my excellent Physiological Assistant in the Christ Church Museum, Mr. Dowson.

With respect to the short Essays in the Third Part of the Memoir, they might perhaps have been wholly spared in their present form; and if so, I should have been saved in that Part much time and trouble. But I hope the work may fall into the hands of persons who have not thought on the subjects of which they treat, or who may not have connected them with the idea of Epidemic Disease. If so, they will have their use in suggesting subjects to their serious attention; and for this purpose they are printed. Various facts and opinions in the Paper will be so familiar to persons conversant with the several matters touched on in it, that they will be tempted to ask, why time was spent upon them. But I bear in

mind a stern rebuke of Chalmers, at the close of one of his Essays, addressed to those who, dreaming about great projects, refuse to apply themselves to the humble tasks lying immediately at their hands. And I am much of the mind of the injunction to children, that they should learn to do their duty in the station of life in which they are placed. So that if in any way this place and neighbourhood be benefited by setting the more active minds here engaged to aid those who have already toiled in this field—and there are many—my object will be attained.

To this may also be added, that some circumstances in the two first Parts of the Memoir have force, chiefly because they occurred in a small City—one possessing an Active and Pious Clergy, and a number of Benevolent and Beneficent persons proportionately as great as any in the kingdom. What then may still be the state of some of the less fortunate and denser Towns?

The matters placed in the Appendix are referred thither to keep the text free from interruptions and digressions.

It remains for me only to add, as heartily and respectfully as I am able, my thanks to those who have in any way aided me by information or advice. I truly wish that the result were more worthy of their names, and their kindness. I fear the Reader may wonder what can have become of communications which were furnished by such men, in so ample numbers.

To the Registrar General Major Graham, and Dr. Farr of his office, I owe the means of obtaining copies of the Registers of Deaths of all places in the surrounding Registration Districts in which Cholera occurred: personally also I must acknowledge the kindness with which their assistance was given. I may add, that wherever Government Officers give such friendly aid to individuals, as I have had from these gentlemen, from Lord Courtenay, Secretary to the Poor Law Board, from the late President of the Board of Health, and Mr. Scott of the same Office, they offer the best incentive to private persons to undertake useful and unpaid public work: and I believe the value of local undertakings of this nature, as furnishing data for more extended inquiries, will in return be acknowledged by those great Offices of State in the Metropolis, with the labours of which, no lesser works can ever compare or compete.

The Members of the Oxford Board of Health who transacted its business in 1854, viz. Mr. Carr the Chairman, Mr. Alderman Butler the Secretary, Mr. Neate, of Oriel College, Messrs. Cartwright and Boddington, will be pleased to allow me to record my hearty thanks for their confidence and kindness, while I acted under

them. Few Members of the University have more reason to acknowledge the value of the hearty cooperation of the Authorities of the City than I have.

To the Medical Practitioners, who were engaged with me in aiding the Guardians in their responsible duties, the Board of Health would, I feel sure, wish to express a grateful sense of their unremitting labours. It would not become me to do this; but I may say, on my own behalf, that I never can forget that the Gentlemen, whose names are here recorded, by their undeviating personal kindness and forbearance, as well as by their energy, made it possible to me to assist in carrying out the wishes of the Board, in aid of the Union Surgeon, Mr. G. R. Wyatt, and have placed within my reach many of the data on which this Memoir is founded. Our common service was the more difficult, because in the previous Epidemics the authority and counsel of the chief residents of the University, and the principal persons in the City, were brought to bear in whatever was done or attempted; and an unfortunate disagreement between the Guardians and the Board of Health in 1849, had left a doubt as to the spirit in which the conduct of another Epidemic would be attempted. To the following Oxford Practitioners therefore are my sincere thanks returned.

R. Jackson, Esq. M. D., (Oxon.,) Physician to the Radcliffe Infirmary.
J. T. Hester, Esq., Surgeon to the Radcliffe Infirmary.
E. L. Hussey, Esq., Surgeon to the Radcliffe Infirmary.
R. J. Hansard, Esq., Surgeon to the Radcliffe Infirmary.
F. Symonds, Esq., Surgeon to the Radcliffe Infirmary.

J. Briscoe, Esq.
W. Doak, Esq.
R. F. Freeborn, Esq.
R. Giles, Esq. M. D. (Edinburgh.)
J. Godfrey, Esq.
J. Hester, jun., Esq.
G. C. H. Hitchings, Esq.
J. M. Hyde, Esq.
W. Leapingwell, Esq. M. D. (Edinburgh.)
J. Martin, Esq.
E. R. Owen, Esq.
W. Rusher, Esq.
J. Taunton, Esq.
T. Tyerman, Esq.
C. J. Vincent, Esq.
J. F. Wood, Esq., Surgeon to the County Gaol.

To the following Gentlemen I am much indebted for various inquiries and communications concerning their respective neighbourhoods. Without their help, the information concerning the District round Oxford would have been unattainable.

A. Batt, Esq., Witney.
E. Batt, Esq., Witney.
W. R. H. Barker, Esq., Wantage.
W. C. Byass, Esq., Dorchester.
T. Chesterman, Esq., Banbury.
C. Cogan, Esq., Wheatley.
J. Denne, Esq., Winslow.
W. P. Douglas, Esq., Banbury.
J. W. Kimpton, Esq., Stadhampton.
W. Lightfoot, Esq., Harwell.
J. F. Martin, Esq., Abingdon.
H. T. T. Palmer, Esq., Woodstock.
H. W. Reynolds, Esq., Thame.
W. G. Walker, Esq., Brill.

The valuable pages of my esteemed colleague Mr. JOHNSON, and the letter from Professor VOELCKER, speak for themselves. Mr. LAWES, and my learned friend Professor DONKIN, have also kindly given me their advice.

Four of the Maps which illustrate this Memoir were drawn by a Lady, who assisted me with the greatest energy and skill in the verification of every house in which Cholera occurred. The basis of the Map of Oxford is Hoggar's Survey.

Much assistance has been derived from Dr. GREENHILL's excellent Paper on the Cholera in Oxford in 1849, printed at the end of the Ashmolean Society's Reports on the Mortality and Public Health of Oxford in 1849 and 1850. The materials concerning the year 1832 and 1849, are derived from this source; and the Tables relating to those years are reprinted from his Work, to facilitate the comparison with the year 1854.

In a scientific sense, parts of the only attainable evidence of an inquiry like this are necessarily inconclusive: much of the useful business of life would come to an end, and the Physician would throw away many lives, if he could not, or would not, manfully act upon the greater probability. I am deeply sensible of the scientific and literary shortcomings of these pages; but I believe that even such a Memoir on every affected district, would prove of real service to the Country. Such Essays would accumulate a great amount of information, derived from negative considerations as well as positive facts, which would bring about much practical good to the people.

PART I.

HISTORY OF THE EPIDEMIC.

CHAPTER I.

Course of the Disease in Oxford.

§. 1. OXFORD has been thrice visited by a Cholera Epidemic: once in 1832, once in 1849, once in 1854. The history of the two first visitations has been already recorded*. It remains to pourtray the more important features of the Epidemic as it appeared in 1854.

The following Memoir will be divided into three Parts.

1st. A record of the mode of invasion, and of the course of the Epidemic, with an examination of those neighbouring districts in which death from Cholera took place at the same time of the year as at Oxford; the treatment adopted in Oxford; and the circumstances which seemed to influence the progress of the malady.

2nd. An account of the Sanitary Arrangements adopted in Oxford.

3rd. Suggestions for the future; or the Lesson of the Epidemic.

It may not be amiss here to premise in what manner the information which follows was obtained. The Sanitary condition of the City was under the care of the Board of Guardians. They appointed a Committee to act as a Board of Health. On the 6th of September the Board added the Writer to their number as Consulting Physician. On the 10th the necessary arrangements came into operation. At this time the Epidemic was almost at its height. No complete record had been attempted before this time; but I have collected, I believe, all the Cases which had previously occurred. On and after the 10th all cases of Diarrhœa and Choleraic Diarrhœa and Cholera were reported to the Board, with but few exceptions, by all the Medical men engaged by it. A weekly return was also furnished at a later period by most of the Medical Practitioners. Their numerical daily Returns have been collated with these more detailed weekly Returns: where there is discrepancy, the excess is usually on the side of the daily Return furnished at the time: on the other hand, some cases have been detected that were not returned at the time, and these cases are entered at their proper date. The names and addresses of several cases of Choleraic Diarrhœa cannot be recovered. The deaths recorded by the Medical Practitioners have been compared with the Registers in the several Districts. With all the care then that was possible, the following Table has been constructed. It records the date, age, sex, residence, result and date of result, of each case of Cholera and Choleraic Diarrhœa, and the occupation of the greater number is appended.

* Memorials of the Malignant Cholera in Oxford, 1832, by the Rev. V. Thomas.—Report on the Mortality and Public Health of Oxford in 1849, '50, by Dr. Greenhill and Mr. Allen. See also Appendix.

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.	
1	Aug. 6	F	32	Butcher's wife	Walton-road, St. Paul's	Death in 10 hours	C	
2	12	F	45	Charwoman	Gas-street, St. Ebbe's	Recovery *	C	
3	12	M	23	Prisoner	County gaol	Recovery		CD
4	15	F	8	Carter's daughter	Gas-street	Death, Aug. 17	C	
5	19	M	50	Prisoner	County gaol	Recovery, Sep. 24		CD
6	29	F	34	Tailor	Gas-street	Recovery, Sep. 5	C	
7	30	M	9	Carter's son	Gas-street	Recovery, Sep. 4	C	
8	30	M	20	Prisoner	County gaol	Recovery, Sep. 15		CD
9	30	F	19	Butcher's daughter	Gas-street	Recovery, Sep. 6	C	
10	30	F	4	Soldier's daughter	Gas-street	Recovery, Sep. 6*	C	
11	30	M	40	Labourer	Gas-street	Recovery	C	
12	30	M	30	Railway Porter	New Osney	Recovery		CD
13	31	M	3	Shoemaker's son	Blackfriars'-road, St. Ebbe's	Death, Aug. 31	C	
14	Sep. 1	F	15 mos.	Labourer's daugh.	Gas-street	Recovery, Sep. 8*	C	
15	1	F	40	Charwoman	Mazey's-yard, St. Ebbe's	Recovery, Sep. 14*		CD
16	1	M	72	Labourer	Sparks's Yard, St. Aldate's	Death, Sep. 3	C	
17	2	M	49	Pipemaker *a*	Waterloo Build., Blackfr.-rd.	Death, Sep. 4	C	
18	2	M	35	Groom	George's-yd., St. Clement's	Recovery, Sep. 9	C	
19	2	M	32	Shoemaker	Church-street, St. Ebbe's	Death, Sep. 5	C	
20	2	M	14 mos.	†	On the River	Death, Sep. 2	C	
21	3	F	16 mos.	Shoemaker's dau.	Blackfriars'-road	Death, Sep. 3	C	
22	3	F	72	Servant's wife	Gas-street	Death, Sep. 4	C	
23	4	F	63	None *b*	High-st., St. Peter's in East	Death, Sep. 4		CD
24	4	M	43	Fishmonger *c*	Market-street, St. Michael's	Death, Sep. 6	C	
25	4	M	48	Milkman *d*	Marston	Recovery, Sep. 10	C	
26	4	M	42	Architect	St. Aldate-street	Death, Sep. 4	C	
27	4	M	15 mos.	Carpenter's son	Godfrey's Row, St. Ebbe's	Death, Sep. 6*	C	
28	4	F	19	Tailor	Gas-street	Recovery, Sep. 6*	C	
29	5	M	69	Tailor	Church-street, St. Ebbe's	Death, Sep. 7		CD
30	5	M	5 mos.	Laundress's son *e*	Near the Church, St. Giles's	Death, Sep. 8		CD
31	5	F	45	Washerwoman	Friar's Entry, S. Mary Magd.	Recovery, Sep. 7		CD
32	5	F	38	Prisoner	County gaol	Death, Sep. 19		CD
33	5	F	40	Labourer's wife	Jericho Gardens, St. Paul's	Death, Sep. 13	C	
34	6	M	60	Boatman	Hythe Bridge, St. Thomas	Death, Sep. 7*	C	
35	6	F	20	Labourer's wife	Mazey's-yard	Recovery, Sep. 9	C	
36	6	F	21	Washerwoman	Blackfriars'-road	Recovery, Oct. 4*	C	
37	6	F	4	Labourer's daugh.	Park-End-street, St. Thomas	Death, Sep. 6	C	
38	6	M	34	Labourer	Park-End-street	Death, Sep. 6	C	
39	7	F	55	Policeman's wife	Gas-street	Death, Sep. 8	C	
40	7	M	33	Coal merchant *f*	Hythe Bridge	Recovery, Sep. 21	C	
41	7	M	56	Surgeon *g*	St. Clement's Alms-house	Death, Sep. 9	C	
42	7	F	36		St. Giles's Road West	Recovery, Sep. 18		CD
43	7	M	50	Mason	Friar's Wharf, St. Ebbe's	Recovery, Sep. 14		CD
44	7	F	28	Waiter	Cornmarket-street	Recovery, Sep. 17	C	
45	8	F	3 mos.		Bath-street, St. Clement's	Death, Sep. 13		CD
46	8	F	36	Labourer's wife	Park-End-street	Death, Sep. 8	C	

* All Cases marked * are those of persons removed from their residence to the Hospital or the Field of Observation.
† In some Cases it has been impossible, in some undesirable, to state the Occupation or Profession.

a "Died of Consecutive Fever."
b In great debility for years—very poor—in want of common necessaries—ill for about twelve hours.
c Reduced by previous illness and distress. House offensive from bad drainage.
d Attacked in New College-street.
e Had had neglected Diarrhœa for four days.
f "Had retention of urine for five days—followed by Gastritis."
g Had severe premonitory Diarrhœa for several days.

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.	
47	Sep. 8	M	2	Labourer's son	Park-End-street	Recovery, Sep. 15*	C	
48	8	F	21	Labourer's wife *h*	Castle-st., St. Ebbe's	Death, Oct. 1	C	
49	8	M	24	Tailor *i*	Seven Stars Inn, S. Aldate's	Death, Sep. 8	C	
50	8	M	48	Hawker	Commercial-road, St. Ebbe's	Death, Sep. 8	C	
51	8	M	5	Carter's son	Gas-street	Death, Sep. 10*	C	
52	8	M	34	Labourer	Jericho Gardens	Recovery, Sep. 14	C	
53	8	M	8	Labourer's son	Sparks's Yard	Recovery, Oct. 4*	C	
54	8	M	5	Labourer's son	Godfrey's Row	Recovery, Sep. 12	C	
55	8	F	35	Tailor's wife	White's Yard, Littlegate	Recovery, Sep. 15		CD
56	8	F	30	Mason's wife *k*	Osney Lane, St. Thomas	Death, Sep. 25	C	
57	9	M	30	Labourer	New Osney	Recovery, Sep. 17	C	
58	9	M	10	Plate-layer's son	New Osney	Death, Sep. 10	C	
59	9	M	38	Accountant	Oriel-st., St. M. the Virgin	Recovery, Oct. 29	C	
60	9	F	18	Labourer's daugh.	Blackfriars'-road	Recovery, Sep. 16	C	
61	9	M	40	Shopkeeper	St. Ebbe's-street	Recovery, Sep. 14	C	
62	9	F	50	Washerwoman	Portland-place, St. Paul's	Recovery, Oct 20	C	
63	9	M	4	Labourer's son	New Hincksey	Death, Sep. 18*	C	
64	9	F	21	Needlewoman	Iffley-road, St. Clement's	Recovery, Sep. 28	C	
65	9	F	54	Prisoner	County Gaol	Recovery, Sep. 20		CD
66	9	M	5 mos.		St. Giles's-street	Death, Oct. 3		CD
67	9	M	40	Prisoner	County Gaol	Recovery, Sep. 24		CD
68	10	F	70	Tradesman's wife *m*	New Osney	Death, Sep. 11	C	
69	10	M	60	Tradesman	New Osney	Death, Sep. 11	C	
70	10	M	9	Labourer's son	New Osney	Recovery, Sep. 23	C	
71	10	M	28	Brewer	Cherwell-st., St. Clement's	Recovery, Sep. 20	C	
72	10	M	9	Shoemaker's son	Bridge-st., St. Ebbe's	Recovery, Sep. 15*	C	
73	10	F	2	Labourer's daugh.	Fisher-row, St. Thomas	Death, Sep. 12	C	
74	10	F	40		County Gaol	Recovery, Sep. 20		CD
75	10	M	50		County Gaol	Recovery, Sep. 21		CD
76	10	F	40	Labourer's wife	New Hincksey	Recovery, Sep. 16		CD
77	10	M	25	Tailor	Floyd's-row, St. Aldate's	Recovery, Sep. 18*		CD
78	11	F	35	Shopkeep. wife *n*	High-street, All Saints	Death, Sep. 13	C	
79	11	F	3	Labourer's daugh.	New Osney	Recovery, Sep. 25	C	
80	11	M	11	Labourer's son	New Hincksey	Death, Sep. 20*	C	
81	11	F	35	*o*	St. John-st., St. M. Magd.	Death, Sep. 23	C	
82	11	M	7	*p*	High-st., St. Clement's	Recovery, Sep. 20	C	
83	11	M	52	Publican	Cornmarket-st., St. Michael's	Death, Sep. 13	C	
84	11	F	30	Prostitute	Should. of Mutt.-yd., S. Tho.	Recovery, Oct. 7	C	
85	11	M	52	Printer	Walton-road	Recovery, Sep. 15		CD
86	11	M	28	Prisoner	County Gaol	Recovery, Sep. 28		CD
87	11	M	42	Labourer	New Hincksey	Recovery, Sep. 26		CD
88	12	M	45	Soldier *q*	High-st., St. Pet. in the East	Death, Sep. 13	C	
89	12	F	39	Tax-collect. wife	Union-place, St. Ebbe's	Death, Sep. 12	C	
90	12	F	49	Grocer's wife	Pollard's-yard, Queen-st.	Death, Sep. 15	C	
91	12	F	37	Laundress *s*	George's-yd., St. Clement's	Death, Sep. 13	C	

h Delivered of a still born child five days after she was attacked by Cholera.
i "Understanding" (as he said) "that just now we should look after the bowels," he took on the evening of the 7th two "antibilious pills." At 10 A. M. on the 8th he was in complete Collapse, and died in a few hours.
k Recovered from Collapse, but died a week afterwards "from Gastritis."
m Had come to New Osney, with her husband, on a visit, the day before they were attacked. No premonitory symptoms.
n Treated with castor oil on a modification of Johnson's plan.
o Profuse and neglected Diarrhœa for 18 hours—Collapse—rice-water evacuations.—Consecutive Fever—All but convalescent—took an over-dose of castor oil—The symptoms returned—Collapse—Death 12 days after the commencement.
p Treated with castor oil.
q Had Diarrhœa on the 10th—recovered on the 11th.—On the 12th dined on pig's liver and a pint of rum—died delirious on the 13th.
s Ill for about three weeks—much better till premature labour came on—then Collapse and death in a few hours.

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.
92	Sep.12	M	77	Tailor	Dragon-yard, St. Aldate's	Death, Sep. 16	CD
93	12	F	40	Servant	Broad-street	Recovery, Sep. 24	CD
94	13	F	72	Lodg.-house keep.	Castle-street, St. Ebbe's	Death, Sep. 15	C
95	13	M	25	Labourer	Gas-street	Recovery, Sep. 18	C
96	13	F	20	Wardour's daugh.	Blackfriars'-road	Recovery, Sep. 27	C
97	13	F	7	Charwom. dau. *r*	Pollard's-yard	Death, Sep. 13	C
98	13	M	39	Saddler	Cornmarket-st.,St.Michael's Workhouse	Recovery, Sep. 15 Death, Sep. 16	CD C
99	14	M	2				
100	14	F	40	Labourer's wife	Orpwood's-row, St. Thomas	Death, Sep. 15*	C
101	14	M	45	Prisoner *t*	County Gaol	Death, Sep. 15	C
102	14	M	16	Drummer	Sparks's-yard	Recovery, Sep. 22	C
103	14	M	33	Shopkeeper	Sparks's-yard	Recovery, Sep. 30	C
104	14	F	10	Grocer's daugh. *u*	Pollard's-yard	Death, Sep. 14	C
105	14	F	53	Washerwoman	Cardigan-street, St. Paul's	Recovery, Sep. 19	CD
106	14	M	15	Labourer's son	Sparks's-yard	Recovery	CD
107	15	M	65	Prisoner	County Gaol	Death, Sep. 15	C
108	15	F	9	Servant's daugh.	Pollard's-yard	Death, Sep. 15*	C
109	15	F	34	Whitesm. wife *x*	Tarry's-yd., St. Pet. in East	Death, Sep. 15	C
110	15	F	41	Glazier's wife *y*	High-st., St. Clement's	Recovery, Sep. 25	C
111	15	F	50	Washerwoman	Nelson's-yd., St. Aldate's	Recov. in 5 weeks	CD
112	16	F	30	Labourer's wife	Sparks's-yard	Recovery, Sep. 24	C
113	16	F	3	Ostler's daughter	Carter's-yd., All Saints	Death, Sep. 16	C
114	16	F	38	Mason's wife *z*	Friars' Wharf, St. Ebbe's	Death, Sep. 23	C
115	16	M	15	Brewer's son	Cherwell-street	Death, Sep. 16	C
116	16	M	29	Labourer *a*	Wyatt's-yd., St. Aldate's	Death, Sep. 16	C
117	16	M	50	Debtor	County Gaol	Recovery, Sep. 24	CD
118	16	M	18	Prisoner	County Gaol	Recovery, Sep. 19	CD
119	16	M	52	Labourer	Bridewell-yd., Speedwell-st.	Recovery, Sep. 20	CD
120	16	M	32	In the Brewery	Cherwell-street	Recovery, Sep. 25	CD
121	16	F	30	Labourer's wife	Cherwell-street	Recovery, Sep. 20	CD
122	17	M	30	Prisoner	County Gaol	Recovery	C
123	17	F	55	Charwoman	Blackfriars'-road	Death, Sep. 17	C
124	17	M	48	Labourer *b*	Church-st., St. Ebbe's	Death, Sep. 22*	C
125	17	F	52	Landlady	Shoulder of Mutton-yard	Recovery, Sep. 23	C
126	17	F	42	Labourer's wife *c*	Wyatt's-yard	Death, Sep. 17	C
127	17	M	9	Labourer's son *d*	New Hinckley	Death, Sep. 19	C
128	17	F	58	Labourer's wife	Carter's-yd., St. Aldate's	Recovery, Oct. 14	C
129	17	M	5	Lacemaker's son	Hollybush-row, S. Thomas	Recovery, Sep.23*	C
130	17	M	18	Servant	Littlegate	Recovery, Sep. 21	CD
131	17	M	36	Railway Inspector	New Osney	Recovery, Sep. 30	CD
132	18	F	52	Labourer's wife *e*	New Hinckley	Death, Sep. 19	C
133	18	F	8	Labourer's daugh.	New Hinckley	Recovery, Sep. 22	C
134	18	F	38	Labourer's wife	Osney Lane	Death, Sep. 18	C
135	18	M	28	Bricklayer	Pollard's-yard	Recovery, Sep. 23	CD
136	18	M	42	Labourer	Park-End-street	Recovery, Sep. 25	CD
137	18	F	27	Washerwoman	Buckland's-row, Queen-st.	Recovery	CD
138	18	M	45	Publican	Cornmarket-st., St. Martin's	Recovery, Sep. 28	CD

r No premonitory symptoms. Death in nine hours.

t Premonitory Diarrhœa—death ten hours after the symptoms of Cholera appeared.

u No premonitory symptoms—death in twelve and half hours.

x House filthy and close.

y Treated with castor oil on a modification of Johnson's plan.

z Recovered from Collapse—sank in Consecutive Fever—is believed to have made no water during the seven days of illness.

a No premonitory symptoms—extreme collapse—death in fifteen hours.

b "Half-starved."

c Previous Diarrhœa for "a day or two." Death in less than 12 hours from the commencement of Collapse.

d Ill-fed and clothed—House dirty.

e "The family without necessaries."

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.
139	Sep.18	M	40	Bookseller	St. Aldate-st., St. Martin's	Recovery, Sep. 25	CD
140	18	M	62	Prisoner	County Gaol	Recovery, Sep. 30	CD
141	19	F	24	Sweep's wife	Buckland's-yd., S. P. le Bail.	Recov. in a fortn.	C
142	19	M	47	Paviour *f*	Floyd's-row, St. Aldate's	Death, Sep. 19	C
143	19	F	35	Gardener's wife	Hunt's Build., Blackfr.-rd.	Recovery, Sep. 24	C
144	19	M	3½	Labourer's son	Caroline-st., St. Clem.	Recovery, Sep. 26	CD
145	19	F	52	Needlewoman	King-st., St. Pet. in the East	Recovery, Sep. 23	CD
146	20	M	68	Shoemaker	Carter's-yard, All Saints	Recovery, Oct. 7	C
147	20	F	33	Charwoman *g*	Bath-st., St. Clement's	Death, Sep. 26	C
148	20	F	34	Labourer's wife *h*	New Hinckley	Death, Sep. 29*	C
149	20	F	50	Horsedealer's wife	Brewer's-street., St. Aldate's	Death, Sep. 23	C
150	20	M	76	Labourer	Workhouse	Death, Sep. 22*	C
151	20	F	50	Prisoner	County Gaol	Recovery, Sep. 29	CD
152	20	M	30	Porter	Church-st., St. Ebbe's	Recovery, Sep. 22	CD
153	20	F	1	Servant's daugh.	Workhouse	Death, Oct. 2	CD
154	20	F	9	Labourer's daugh.	Bath-street	Recovery, Sep.27*	CD
155	20	M	6	Labourer's son	Bath-street	Recovery, Sep.23*	CD
156	20	M	11	Labourer's son	English's-yard, St. Aldate's	Recovery, Sep. 28	CD
157	20	M	16	Labourer's son	English's-yard	Recovery	CD
158	20	F	45	Widow	English's-yard	Recovery	CD
159	20	F	40	Stableman's wife	English's-yard	Recovery	CD
160	21	F	12	Labourer's daugh.	Corbett's-yard, St. Thos.	Recovery, Sep. 28	C
161	21	M	3	Labourer's son	Bath-street	Death, Sep. 23*	C
162	21	F	1	Ostler's daugh.	Carter's-yard, All Saints	Death, Sep. 21*	C
163	21	F	3½	Labourer's daugh. *i*	Wyatt's-yard	Death, Sep. 22	C
164	21	M	11	Labourer's son	New Hinckley	Recovery, Sep. 24	CD
165	21	M	30	Prisoner	County Gaol	Recovery, Oct. 2	CD
166	21	F	23	Prostitute	Shoulder of Mutton-yard	Recovery, Sep. 29	CD
167	22	F	50	Paviour's wife	Thames'-st., New Hinckley	Death, Sep. 23	C
168	22	F	5 mos.	Labourer's daugh.	Wyatt's-yard	Recovery, Sep. 26	C
169	22	M	5	Hop-picker	Stean's-yd., St. Thomas	Death, Sep. 23	C
170	22	F	24	Carpenter's wife	Thames'-street	Death, Sep. 23	C
171	22	F	5	Labourer's daugh.	Wyatt's-yard	Death, Sep. 25*	C
172	22	F	9	Labourer's daugh.	Godfrey's-yd., St. Ebbe's	Death, Sep. 24*	C
173	22	F	5	Printer's daugh.	Turle-street, All Saints	Death, Sep. 23	C
174	22	F	25	Carpenter's wife *k*	New-street, St. Ebbe's	Death, Sep. 23	C
175	22	M	28	Prisoner	County Gaol	Recovery, Oct. 1	CD
176	22	M	24	Prisoner	County Gaol	Recovery, Oct. 1	CD
177	22	F	40	Prisoner	County Gaol	Recovery, Sep. 28	CD
178	22	F	34	Prisoner	County Gaol	Recovery, Sep. 29	CD
179	22	F	50	Prisoner *l*	County Gaol	Recovery, Sep. 28	CD
180	23	M	2	Labourer's son	Workhouse	Death, Sep. 25	C
181	23	M	17 mos.		Billing's-yard, St. Thomas	Death, Sep. 24	C
182	23	F	50	Plasterer's wife	Blackfriars'-road	Recovery, Oct. 7	C
183	23	F	10	Stable-keep. dau.	Friars' Wharf	Recovery, Oct. 7	C
184	23	M	28	Prisoner	County Gaol	Recovery, Sep. 30	CD
185	23	F	55	Builder's wife	Cowley-road, St. Clement's	Recovery, Oct. 7	CD
186	23	M	2	Carpenter's son *m*	New-street, St. Ebbe's	Death, Sep. 23	CD
187	24	M	13	Prisoner	County Gaol	Death, Sep. 25	C

f Diarrhœa for one day. Death in thirteen hours after cramps and Collapse came on.

g On the 19th she was convalescent from Choleraic Diarrhœa, and was desired to keep at home. She went out, and on the 20th had Collapse, rice-water evacuations, suppression of urine. Death from Consecutive Fever on the 26th. She was under the influence of Mercury when seized with Cholera.

h "Without food for two days."

i Diarrhœa came on at midnight. Symptoms of Cholera at 5 A. M. Death at 10 P. M.

k A very severe case. She had nursed a fatal Cholera case.

l Had neglected Diarrhœa for 36 hours.

m Slight premonitory Diarrhœa. Collapse for eight and a half hours.

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.	
188	Sep.24	F	11	Servant	Paradise-square, St. Ebbe's	Recovery *	C	
189	24	F	45	Laundress	High-st., St. Thomas's	Death, Sep. 24	C	
190	24	F	31	Servant	Queen-st., St. P. le Bailey	Death, Oct. 3		CD
191	24	M	40	Brewer	Hythe-bridge	Recovery, Oct. 5		CD
192	24	M	36	Labourer	George-st., St. Clem.	Recovery, Oct. 4		CD
193	25	M	56	Labourer	Green's-yd., St. Thomas's	Recovery, Oct. 9	C	
194	25	M	44	Chair-maker	Caroline-street	Recovery, Oct. 18	C	
195	25	M	30	Porter	Hollybush-row	Recovery, Oct. 3		CD
196	25	F	45	Stable-keep. wife	Friars' Wharf	Recovery, Sep. 30		CD
197	26	M	66	Schoolmaster *n*	Speedwell-st., St. Ebbe's	Death, Sep. 27	C	
198	26	F	24	Labourer's wife	Fisher-row	Recovery, Oct. 10	C	
199	26	F	34	Labourer's wife	Osney-lane	Recovery, Nov. 15 *	C	
200	26	F	59	Shoemaker's wife	York-place, St. Clement's	Recovery		CD
201	26	F	55	Nurse	St. Aldate's-st.	Recovery, Oct. 6		CD
202	27	F	27	Labourer's wife	Orpwood's-yd., St. Thos.	Death, Sep. 27	C	
203	27	F	19	Nurse	Billing's-yard	Death, Sep. 28	C	
204	27	M	21	Prisoner	County Gaol	Recovery, Oct. 4		CD
205	27	F	20	Builder's daugh.	Cowley-road	Recovery, Oct. 7		CD
206	27	F	26	Engine-driv. wife	Church-lane, St. Thos.	Recovery, Oct. 10		CD
207	27	M	36	Prisoner *o*	County Gaol	Recovery, Oct. 2		CD
208	28	F	68		Coach & Hors.-yd., Qu.-st.	Recovery, Oct. 6		CD
209	28	F	60	College servant	Magdalen-street	Recovery, Oct. 6		CD
210	28	F	65	Fisherman's wife	Coach & Horses-yard	Recovery, Oct. 10		CD
211	29	F	52	Housekeeper	St. Aldate's-st.	Death, Oct. 3	C	
212	29	M	18	Prisoner *p*	County Gaol	Death, Sep. 29	C	
213	29	M	2	Labourer's son *q*	Faulkner's-row, St. Thos.	Death, Sep. 29	C	
214	29	F	4	Tailor's daugh.	Stean's-yard	Death, Sep. 29	C	
215	29	F	40	Nurse	Wellington-st., St. Paul's	Recovery, Oct. 3		CD
216	29	M	68	Shopkeeper	Cherwell-terrace, St. Clem.	Death, Oct. 11		CD
217	29	F	32	Servant	King-st., St. Pet. in the East	Recovery, Oct. 8		CD
218	29	M	40	Labourer	Shepherd's-row, St. Aldate's	Recovery, Oct. 6		CD
219	29	F	9		Long Wall-pl., St. Pet. in East	Recovery, Oct. 6		CD
220	29	F	65	Labourer's wife	English's-yard	Recovery, Oct. 8		CD
221	29	M	57	Labourer	English's-yard	Recovery		CD
222	30	F	7	Groom's daugh.	Friars' Wharf	Recovery in a week	C	
223	30	F	42	Labourer's wife	School-yard	Recovery	C	
224	30	F	60	Labourer's wife	Mazey's-yard	Death, Oct. 6	C	
225	30	M	14 mos.	Labourer's son	Osney-lane	Death, Oct. 2	C	
226	30	M	17	Mercer's assistant	Magdalen-st.	Recovery, Oct. 4		CD
227	30	F	24	Tailor's wife	Floyd's-row	Recovery in a week	C	
228	Oct. 1	M	17	Butcher	Vaughan's-yd., St. Thos.	Recovery, Oct. 7	C	
229	1	F	62	Labourer's wife	Wellington-street	Death, Oct. 1	C	
230	1	M	13	Laundress's son	Corbett's-yard	Recovery, Oct. 9 *	C	
231	1	F	10	Labourer's daugh.	Green's-yard	Death, Oct. 2	C	
232	1	M	1	Bargeman's son	Hythe-bridge	Death, Oct. 2	C	
233	1	M	13	Printer's son	Floyd's-row	Death, Oct. 2	C	
234	1	M	14	Labourer's son	Stean's-yard	Recovery, Oct. 7	C	
235	1	M	5	Labourer's son	Roberts's-yard, St. Thos.	Recovery, Oct. 23		CD
236	1	M	4	Butcher's son	Hamel	Recovery, Oct. 6 *		CD
237	2	M	12	Labourer's son	Wyatt's-yard	Recovery, Oct. 2	C	
238	2	M	5	Publican's son	Hythe-bridge	Recovery, Oct. 5	C	

n Diarrhœa and sickness on the 24th. Death 16 hours after Collapse came on.

o Very severe case. Had been constipated for three days, and took half an ounce of castor oil.

p Was quite well and at work eleven hours before his death.

q Death in about two hours from the commencement of the attack.

Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.	
239	Oct. 2	M	3	Cutler's son	Paradise-street, St. Ebbe's	Death, Oct. 2	C	
240	2	M	35	Sawyer	Gas-street	Death, Oct. 21 *	C	
241	2	M	34	Painter	George-st, St. Mary Magd.	Recovery, Oct. 5	C	
242	2	M	6	Labourer's son	Brewer-street, St. Ebbe's	Recovery, Oct. 6	C	
243	2	M	72	Farrier	St. Giles's-road West	Death, Oct. 3	C	
244	2	M	30	Labourer	Shoulder of Mutton-yard	Recovery, Oct. 5	C	
245	2	M	9	Porter's son	Park-End-street	Recovery, Oct. 16		CD
246	2	F	40	Labourer's wife	Green's-yard	Recovery, Oct. 12 *		CD
247	3	M	10	Plasterer's son	Hamel	Death, Oct. 8	C	
248	3	M	5	Fishdealer's son	High-st., St. Thomas's	Recovery, Oct. 6	C	
249	3	F	42	Butcher's wife	Hamel	Recovery, Nov. 22	C	
250	3	M	2	Tailor's son	Tredwell's Gard., Speedw.-st.	Recovery, Oct. 17 *	C	
251	3	F	43	Laundress	Bath-street	Death, Oct. 3	C	
252	3	F	58	Prisoner	County Gaol	Recovery, Oct. 10		CD
253	3	M	60	Labourer	High-st., St. Thomas's	Recovery, Oct. 4 *		CD
254	3	F	2½	Labourer's dau. *r*	Caroline-street	Death, Oct. 10		CD
255	3	F	7 mos.	Labourer's dau. *s*	Red-Lion-sq., St. M. Magd.	Death, Oct. 4		CD
256	3	F	50	Washerwoman	Fisher-row	Recovery, Oct. 12		CD
257	4	F	11	Laundress's dau.	Blay's-yard, St. Thos.	Death, Oct. 5	C	
258	4	M	10	Cook's son	Speedwell-terrace, St. Aldates	Recovery, Oct. 11	C	
259	4	M	30	Tradesman	High-st., St. Clement's	Recovery, Oct. 7		CD
260	4	M	50	None	Blenheim-place, St. Giles's	Recovery, Oct. 13		CD
261	5	M	40	Prisoner	County Gaol	Recovery, Oct. 12	C	
262	5	F	65	Labourer's wife	Osney-lane	Recovery, Oct. 19 *	C	
263	5	M	40	Labourer	Mazey's-yard	Death, Oct. 6 *	C	
264	5	F	27	Labourer's wife	Osney-lane	Death, Oct. 13	C	
265	5	F	2	Cutler's daughter	Paradise-street	Recovery, Oct. 8	C	
266	5	F	7		Parker's-square, St. Giles's	Recovery	C	
267	5	F	13	Labourer's daugh.	Green's-yard	Recovery, Oct. 12	C	
268	5	F	40	Prisoner	County Gaol	Recovery, Oct. 11		CD
269	5	F	75	*t*	Caroline-street	Death, Oct. 6		CD
270	5	F	60	Servant	Church-street, St. Ebbe's	Recovery, Oct. 11		CD
271	5	M	25	Painter	George-street, St. M. Magd.	Recovery, Oct. 14		CD
272	6	M	26	Copper-pl. Printer	George's-yard	Death, Oct. 8	C	
273	6	F	27	Labourer's wife	Osney-lane	Death, Oct. 8	C	
274	6	F	32	Publican	Market-street	Recovery, Oct. 9		CD
275	7	F	60	Labourer's wife	Shepherd's-row	Death, Oct. 8	C	
276	7	F	7	Carman's daugh.	Mazey's-yard	Death, Oct. 8 *	C	
277	7	M	46	Carter	Mazey's-yard	Recovery, Oct. 8	C	
278	7	F	17	Brazier's daughter	Blay's-yard	Death, Oct. 9	C	
279	7	F	57	Labourer's wife	Hollybush-row	Recovery, Oct. 16	C	
280	7	F	2	Plasterer's dau. *u*	Tawney's-yard, St. Thos.	Death, Oct. 11	C	
281	7	F	59	Laundress	Cherwell-terrace	Recovery, Oct. 18		CD
282	7	M	26	Traveller	Taken to the Field of Observation	Recovery, Oct. 9 *		CD
283	7	F	25	Traveller's wife		Recovery, Oct. 9 *		CD
284	7	F	18 mos.	Traveller's child		Recovery, Oct. 9 *		CD
285	8	M	56	Shoemaker	George-street, St. M. Magd.	Recovery, Oct. 14		CD
286	9	M	60	Tailor	Castle-st., St. Pet. le Bailey	Recovery, Oct. 11 *		CD
287	9	F	2½	Labourer's daugh.	Caroline-street	Recovery, Nov. 14		CD
288	10	F	58	Gardener's wife	Lamb & Flag-yd., St. Thos.	Recovery, Oct. 24		CD
289	11	F	77	*x*	Bath-street	Death, Oct. 11	C	
290	11	F	23	Labourer's wife	Osney-lane	Death, Oct. 11	C	

r Long ill—much neglected.

s Diarrhœa for three weeks before Cholera came on.

t Refused medicine.

u Died from Hydrocephalus while recovering from Cholera.

x Refused medicine.

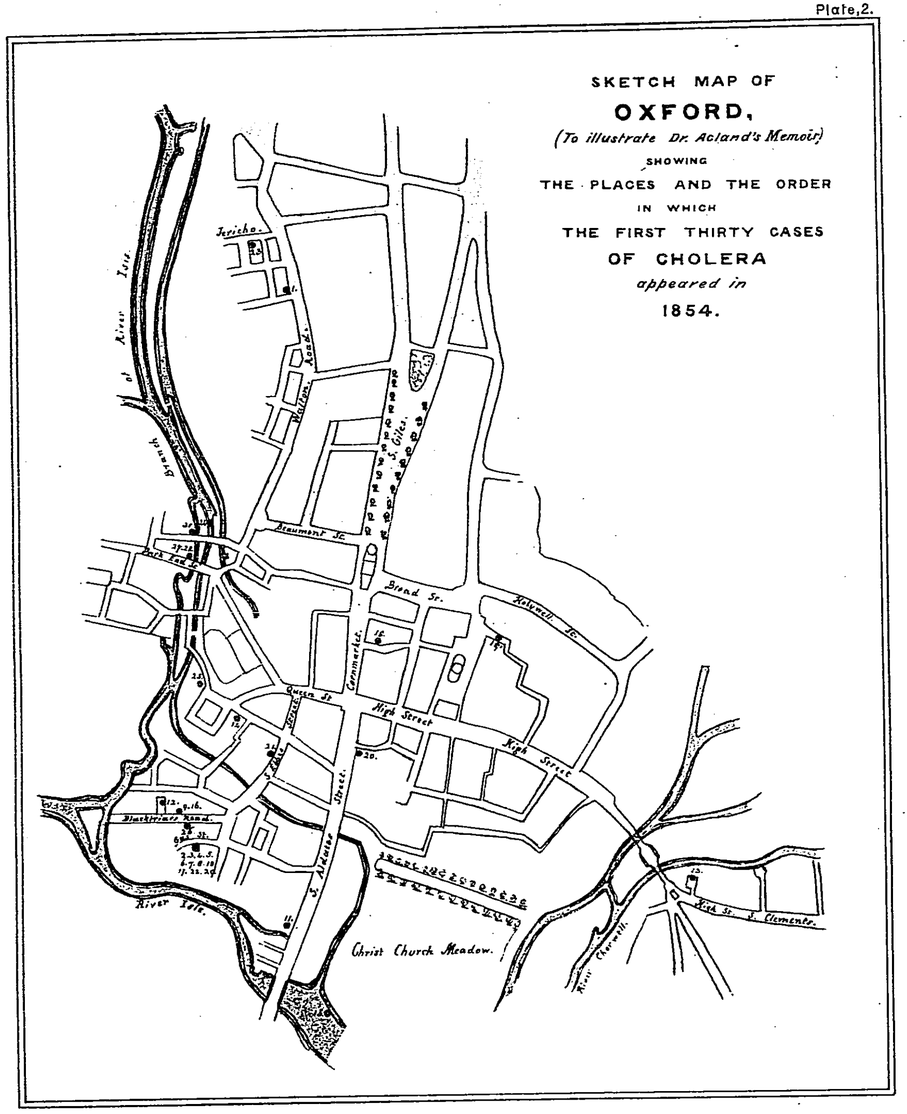
Cases.	Date.	Sex. M. or F.	Age.	Occupation.	Residence.	Result.	Cholera, or Chol. Diarrh.	
291	Oct. 11	M	50	Labourer	Hamel	Death, Oct. 12*	C	
292	11	M	13	Labourer's son	Caroline-street	Recovery, Oct. 16		CD
293	12	F	39	Washerwoman	Church-st., St. Ebbe's	Recovery, Oct. 27*	C	
294	12	M	8	Shopkeeper's son	High-st., St. Clement's	Death, Oct. 14*	C	
295	12	F	5 7/12	Shopkeeper's dau.	High-st., St. Clement's	Recovery, Oct. 16	C	
296	12	F	50	Traveller	Hamel	Death, Oct. 14	C	
297	12	F	47	Laundress	Ayres's-yard, St. Thos.	Recovery, Oct. 26		CD
298	12	F	89		Near the Church, Holywell	Recovery, Oct. 14		CD
299	12	F	35	Dressmaker	Lamb & Flag-yard	Recovery, Oct. 22		CD
300	13	F	30	Traveller	Castle-st., St. Ebbe's	Recovery, Oct. 17*	C	
301	13	F	32	Hawker	Orpwood's-yard	Death, Oct. 17*	C	
302	13	F	29	Needlewoman	Castle-st., St. Pet. le Bailey	Recovery, Oct. 17		CD
303	13	M	14	Printer's son	Cardigan-st.	Recovery, Oct. 21		CD
304	14	F	50	Carter's wife	Mazey's-yard	Death, Oct. 14	C	
305	14	F	47	Brazier's wife	Blay's-yard	Recovery, Oct. 28	C	
306	15	F	47	Plasterer's wife	Tawney's-yard	Death, Oct. 16*	C	
307	16	M	4	Sweep's son	St. Ebbe's-street	Recovery, Oct. 20		CD
308	16	F	50	Prisoner	County Gaol	Recovery, Oct. 22		CD
309	17	F	3	Shopkeeper's dau.	High-st., St. Clement's	Death, Oct. 18*	C	
310	17	F	45	Labourer's wife	Green's-yard	Recovery, Oct. 30		CD
311	18	F	35	Tailor's wife *y*	Turle-street	Death, Oct. 19.	C	
312	18	F	2	Painter's child *z*	Friars'-street	Recovery, Oct. 31		CD
313	19	M	40	Labourer	Fisher-row	Recovery, Oct. 26		CD
314	20	M	21	Shoemaker	Hind's-yd., Blackfriars'-road	Death, Oct. 20*	C	
315	20	F	30	Labourer's wife	Cherwell-street	Death, Oct. 21*	C	
316	20	F	24	Smock-frock mak.	High-st., St. Thomas's	Recovery, Oct. 29		CD
317	30	F	2	Shoemaker's dau.	Bridport-street	Death, Oct. 30	C	

y No premonitory symptoms—Collapse—Death in eight hours from commencement. *z* Death "from Fever."

The foregoing Table records, as far as it was possible* to determine it, the order in which the cases of Cholera and Choleraic Diarrhœa followed each other; together with the mode in which each case terminated. It is not pretended that this Table is absolutely correct, but it is as nearly so as extreme care could ensure. It was found impossible to state in addition the duration of each case. This is of less moment, because the London Tables give statistics of the duration of the disease at all ages, founded upon data far more extensive than Oxford would furnish. A tabular statement such as is here placed before us, conveys more instruction than will at first strike the reader. From it may be deduced with tolerable accuracy the course and the severity of the Epidemic, both in respect of the number of the cases and intensity of the disease, and all the detailed consequences which may be deduced from these. It furnishes also the standard of comparison with Dr. Greenhill's summaries of the Cholera Epidemics as they prevailed in 1832 and in 1849. These particulars will be elucidated in order by the aid of Maps 1, 2, 3, and Tables 2 to 7.

* See Introduction.

Plate, 2.



Localities of the first Thirty Cases.

§. 2. First of all then let Plate 2, or the Sketch-Map of Oxford, be compared with the Table. It will be noticed that the first case occurred in Jericho at the north of the town, in a street called Walton Road; the second at almost the extreme south, in the parish of St. Ebbe's, in Gas Street; the third, fourth, fifth, sixth, seventh, eighth, in the same block of houses as the second: the ninth in the street next to that in which this block is situated: the tenth in the same block: the eleventh in a yard leading out of St. Aldate's, part of a main street which runs north and south through the whole length of the town: the twelfth in a yard close by the ninth: the thirteenth in the extreme east of the town, St. Clement's: the fourteenth in Church Street, St. Ebbe's: the fifteenth in a house-boat on the river: the sixteenth close to cases nine and twelve: the seventeenth near the block in Gas Street: the eighteenth in the highest and most central part of the town: the nineteenth victim was a countryman taken ill suddenly in the most open part of the City: the twentieth a professional gentleman, a casual visitor in St. Aldate's: the twenty-second, another case in the block in Gas Street: the twenty-third in the neighbourhood of the first case: the twenty-fourth, twenty-seventh, twenty-eighth, and thirtieth, were the first set in the poor district of St. Thomas's: the twenty-fifth was in St. Ebbe's, near Paradise Square; while the twenty-sixth and twenty-ninth were in the neighbourhood of the great focus in Gas Street.

As far as it is proper to surmise conclusions from these data, we are irresistibly led towards the supposition that Cholera may arise without communication with infected districts on the part of those attacked, but also that it does spread under some circumstances and in some localities from person to person.

Physical Topography of the City.

§. 3. It is manifest, however, that these bald facts alone will not adequately elucidate the course of the Epidemic in Oxford. Since it has been shewn where it first arose, and what was the order of the succeeding twenty-nine cases, it will be the shortest and best course to take a general survey of the condition of the whole Town. For this purpose the Map which is placed at the beginning of the Memoir must be consulted.

Oxford is for the most part built upon a peninsula formed by the junction of the Cherwell and Isis, which takes place at the south-east angle of Christ Church Meadow. Both rivers are subdivided into, or receive, before their union, various smaller streams, while parallel to, and close by, one branch of the Isis is the Oxford Canal. The distance from one river to the other at the north of the City is about a mile. They do not materially approximate until they have both passed in their southern course the latitude of the centre of the City. They then gradually curve round to meet at the point above named. The consequence of this is that there is a flat alluvial district to the east, the west and the south of the Town, through which the rivers with their lesser streams find their way. Unhappily, upon

portions of this flat, within the circumference and round the margin of the peninsula, some parts of Oxford are built, namely, St. Thomas's, St. Ebbe's, and, immediately outside the Cherwell, St. Clement's. The remainder of the City is elevated mainly by the superposition of gravel upon the Oxford clay. The highest point of ground is at the four-cross way, where the great north and south line of traffic, St. Giles, Cornmarket, and St. Aldate's, intersects the High Street and Queen Street, which divide the Town, speaking generally, from north-west to south-east. This point is not quite fifty feet above the datum assumed by Mr. Hoggar, which gives the ordinary high-water mark above Folly Bridge, (the extreme south of the City,) as about 15 feet, and the ordinary water surface under Folly Bridge at 13 feet. In other words, Carfax (the highest point of the City) is 37 feet above the average water under Folly Bridge*.

Now a reference to the Map will shew that the first contour line includes an irregularly triangular space of no great extent round the Carfax summit. A contour line is given at every five feet of descent from the summit. The first line includes St. Martin's, a great part of St. Peter le Bailey, and All Saints' parishes, and a portion of St. Michael's; and the reader will take notice that while the second contour line 10 feet below the summit, marked therefore 39.64, is distant from Carfax only the short space down St. Aldate's to Bear Lane, it includes on the northern side of the Town, the whole of St. Giles's Street, and the eastern and western St. Giles's Roads; in fact, it may be seen to run on beyond the limits of the City northward, after comprising Broad Street, the whole of St. John's, Trinity, and Wadham, and the Parks. The centre and northern part of the Town is therefore the highest. St. Aldate's descends rapidly. The third contour level, 34.64, passes through Christ Church north of Tom Gate; the fourth south of it; the fifth below Dr. Pocock's fig-tree; the sixth south of the Christ Church stables, by the Trill Mill Stream. This last line is 6½ feet above the average water surface at Folly Bridge. To pursue in thorough verbal detail the contour lines through all their sinuous course would be wholly unnecessary. It may be briefly stated, that the ground falls very rapidly from St. Peter le Bailey Church, at the west end of Queen Street, to Paradise Street, and that the High Street is bisected at All Saints' Church by the first contour line, at Oriel Lane by the second, at the Master of University's lodgings by the third, above King Street by the fourth, while the fifth, 11½ feet above the water at Folly Bridge, bisects diagonally the Botanical Garden from east to west.

Many words would be unnecessary, and a few will quite suffice to state what parts of the City are still, notwithstanding the continued attention for many years

* Any one comparing these measurements with the measurements given in the Sections prepared by Mr. Macdougall Smith, under the direction of Sir Wm. Cubitt, must bear in mind that he assumes a datum 52.10″ below the point A, as seen at Sandford Lock. In their Report the same height, as Mr. Hoggar has calculated, is given for Carfax, namely, 37 feet. Carfax is marked therefore on one of Sir W. C.'s sections as 89 feet.

of the working part of the Oxford Improvement Commissioners, either imperfectly drained, or wholly undrained. A general view of these may be best taken by those who care to know the present state of the case, by attention to the parts of the Map which are shaded green. The principal of these undrained portions will be seen to be (1st) between the first and second contour lines, in St. Peter le Bailey and St. Ebbe's: (2dly) between the second and third contour lines, in the same parishes and in St. Paul's district. Below these (3dly) the whole of St. Thomas's, St. Ebbe's, St. Aldate's, and St. Clement's, and (4thly) dispersed about the City, parts of St. Giles's, Holywell, St. Peter's in the East, and St. Mary Magdalen, are in the same category*. Outside the Town also should be noticed the unhappily placed New Osney to the west, and New Hinckesey to the south.

Of evils of a similar kind, but occupying less extended space, we have our share. To trouble the reader with them in detail must be certainly superfluous, the more because they have been already laid before those who are interested in them in various publications†: but still it seems worth while to present a general view of the spots which have been stigmatized by the careful investigators to whom I have referred, as either actually unhealthy, or as dangerous to health. And accordingly, having at various times verified the general correctness of their observations, I have inserted in the Map references to the principal spots to which they have drawn attention, in the following way. First of all, those parts of which they found occasion to complain, but which have since been remedied in respect of the particular ground of complaint, are indicated by dark rings, such as the two in Broad Street, which was described as undrained, whereas it now is drained. Secondly, those localities which have only been partly remedied are marked with a similar ring partly occupied by a dark wedge, as, for instance, in part of Church Street, St. Thomas's, and the wholly unremedied parts are marked by a dark disk, as may be seen at the north of the same street. Any person curious to investigate these in detail may tabulate for himself the several criticisms in the writings referred to in the foot-note. So dismal a document has of course been constructed for the purposes of this Memoir, but to trouble the reader with it in print seems unnecessary.

Nor need we indeed describe the exact sites of these evils; some few will be found even at the summit of the City around Carfax. Others, but these have in most cases been remedied since the writer described them, between the first and

* In the examination and determination of these several spots, and in detailed inquiries into various local engineering questions, I had the pleasure of much intercourse with Mr. Macdougall Smith, and have received habitual assistance, at various times within the last ten years, from Mr. Selby of Oxford.

† First, in the excellent paper of my much esteemed friend William Ormerod, on the Sanitary Condition of Oxford, in the Reports of the Ashmolean Society. Secondly, in the Report on the Mortality and Public Health of Oxford, published by the Ashmolean Society, and prepared by Dr. Greenhill and Mr. Allen. Thirdly, on the Streets of Oxford, in valuable letters, by Mr. Vincent, which appeared anonymously in the Oxford Herald. And, fourthly, in various papers published by Mr. Rowell.

the second contour lines; but unquestionably the great mass will be found about George Lane, in St. Mary Magdalen, in St. Thomas's, St. Ebbe's, St. Aldate's, and St. Clement's. In other words, in the chief of those parts described as undrained.

The Impurities of the Isis and the Cherwell.

§. 4. While the attention of the reader is still directed to these general questions relating to the condition of Oxford, as it was when the Cholera visited it in 1854, it is desirable that he should form for himself an estimate of the extent to which the Streams, as they pass through the town, are contaminated by sewage filth poured into them. Down the centre of each stream, so contaminated, is drawn a dark broken line, and the points where the greatest amount of contamination occurs, are marked by a dark triangle whose base rests on the points of the shore from which the sewage is poured. Accordingly it will be noticed that both the streams which pass through St. Thomas's are, before they enter the parish, contaminated by sewers from other parts of the Town, receiving similar foul additions from the parish itself and the Gaol; afterwards, before reaching the Water-works, various outpourings from St. Ebbe's enter the river. The stream called Trill Mill Stream, which passes through the north of St. Ebbe's and St. Aldate's, receives and contributes its quota of filth to mingle with the main branch of the Isis, as it flows in front of the walk in Christ Church Meadow, the favourite resort of the boating community of Oxford. To fence off the foul odours of this Trill Mill Stream or Pactolus from those who frequent these grounds for health and pleasure, the Dean and Chapter of Christ Church several years since, munificently erected a substantial wall. The collected impurities which flow in the course that is now described are met at the mouth of the Cherwell by the refuse which that stream, pure in comparison before it reached the City, obtains from the drainage of parts of St. Mary Magdalen, Holywell, St. Peter in the East, together with the entire refuse of the district of St. Clement's.

With this general knowledge of the condition of the City in respect of position, altitude expressed by the contour levels, relations to streams, drainage, contamination of water, and other nuisances, we may now pass to the systematic survey of the progress of the Cholera, after it was once established by the thirty cases above enumerated (page 15.) When this survey has been completed, we shall be able to form some opinion of the relation between the Disease and the Physical Condition of the City.

The Intensity of the Disease in successive periods of the Epidemic.

§. 5. In tracing the progress of the Choleraic Disease through the people of Oxford, the Cholera of the true Asiatic type will be first considered, and afterwards the so called Choleraic Diarrhœa and the simple Diarrhœa will be briefly touched upon. The distinction which the Oxford Practitioners drew between these two forms of Disease will hereafter be more explicitly stated. First, then, the Cholera will be described in respect of Time, and, secondly, in respect of Place.

Under the head of Time, the duration and the relative intensity of the Disease during the Epidemic will be considered.

The total number of Cases of true Cholera was 194, or 7.33 per 1000 of the population. The Deaths were 115, or 4.34 per 1000. The Deaths were therefore in proportion to the Cases at the rate of 59.28 per cent. If we examine the rate at which the Epidemic spread by weeks, we shall find that whereas in the first three weeks there occurred but 3 cases of Cholera, in the succeeding three there were 83. In the three weeks that next followed 91 cases occurred. In the three succeeding, 16. In the thirteenth and last week, 1. It may be said therefore that the first and the last quarters of the Epidemic epoch were occupied by the onset and the decline of the Disease respectively, while the two intervening quarters shewed it at its maximum=the Epidemic lasting thirteen weeks*. Or, if we inquire into the ascent of the Disease up to the end of the sixth week, or the middle of the Epidemic, we shall find that there were 12 cases in the first week of the second quarter, 35 in the second, and 36 in the third.

The Epidemic did not decline from this central point at the same rate as it increased, for the seventh week had 35 cases, and there were 37 in the ninth; but then, in the tenth week the new cases fell to 11, nearly the same number as occurred in the fourth week. There were only 5 new cases in the eleventh, none in the twelfth, and 1 in the last. Any person desirous of calculating the intensity of the Epidemic in proportion to the population in each of these weeks can do so. But these and other facts may be readily seen in the Tables. If we inquire into what was the Mortality in proportion to the cases in each of the quarters, the following may be noted. In the first quarter, of the 3 cases 2 were fatal. Of the 83 cases in the second quarter of the Epidemic period, 48 died, or 57.8 per cent. In the third quarter, out of 91 cases, 52 died, or 57.1 per cent. And in the last quarter, of the 16 cases, 12 died, or 75 per cent.: and the only case which occurred in the last week died. From which it would appear, that, after the 3 first cases (of which 2 were fatal) in the first quarter, the *number of cases* increased greatly in the second quarter, slightly in the third, and greatly diminished in the last; the mortality in the third quarter was rather less than in the second, viz. 57.1 and 57.8 per cent. respectively; and the proportional fatality of the Disease materially increased in the last quarter.

Again, referring to the *weeks* it seems proper to notice that in the seventh week the deaths were in the proportion of 65.7 per cent., but in the eighth and ninth 57.9 and 48.7 per cent. respectively of the persons attacked. In the small numbers with which we are dealing, much stress must not be laid on such statistics, and yet they are noticeable.

These facts are summed up in the following Tables, together with the corresponding facts in the two previous Epidemics.

* It will be noticed that in the thirteenth week there was only one Case and one Death. This occurred in an infant. We are at liberty to ask whether this were genuine Cholera. If not, the Epidemic lasted only eleven weeks.

TABLE II.

Reported Cases and Deaths, from Choleraic Disease, in the different Parishes in the weeks ending Saturday,

DISTRICTS.	Aug. 12.				Aug. 19.				Aug. 26.				Sep. 2.				Sep. 9.				Sep. 16.				Sep. 23.			
	Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.	
	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C
North.																												
St. Giles	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	2	..	..	..	..	..	..	..	..	..
St. Paul	..	1	..	1	..	..	..	..	..	..	..	..	..	.	..	..	..	3	..	1	2	..	..	..	..	..	..	..
Total	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	3	3	2	1	2	..	..	..	..	..	..	..
West.																												
St. Thomas	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	9	..	6	..	7	..	4	3	6	..	3
Central.																												
All Saints'	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	3	..	2
Holywell	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..
St. Martin	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	1	..	..	..	..
St. Mary Magdalen	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
St. Mary the Virgin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	..	1	..	..	..	..
St. Michael	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	2	1	..	..	..	..	..	..
St. Peter le Bailey	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	2	..	2	1	..	..	..
St. Peter in the East	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	1	1	2	9	..	9	5	4	..	2
East.																												
St. Clement	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	2	1	1	2	5	..	2	4	2	..	2
South.																												
St. Aldate	.	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	3	..	2	5	4	1	1	4	7	..	5
St. Ebbe	..	1	..	..	..	1	..	1	..	..	..	..	1	9	..	3	3	13	1	7	..	7	..	4	3	7	1	4
Total	..	1	..	..	..	1	..	1	..	..	..	..	1	11	..	5	3	16	1	9	5	11	1	5	7	14	1	9
Extraparochial.																												
County Gaol	1	..	..	.	1	..	..	..	..	..	..	..	1	..	..	..	3	..	1	..	5	2	..	2	9	1	..	..
Workhouse	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	2	1	2
Total	1	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	3	..	1	..	5	3	..	3	10	3	1	2
Strangers ill in street.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
New Hincksey	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	2	..	1	..	1	..	5

DISTRICTS.	Sep. 30.				Oct. 7.				Oct. 14.				Oct. 21.				Oct. 28.				Nov. 4.				TOTAL.			
	Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.		Cases.		Deaths.	
	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C
North.																												
St. Giles	..	..	..	..	1	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	2	1
St. Paul	1	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	5	0	3
Total	1	..	..	..	1	3	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	7	2	4
West.																												
St. Thomas	3	9	..	6	6	18	..	8	3	5	..	4	3	1	..	1	..	..	..	..	..	..	..	..	19	55	0	32
Central.																												
All Saints'	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	0	6	0	5
Holywell	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	0	0	0
St. Martin	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	0	0
St. Mary Magdalen	2	..	..	..	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	2	1	1
St. Mary the Virgin	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	0	0
St. Michael	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	0	2
St. Peter le Bailey	3	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	7	5	1	3
St. Peter in the East	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	1	2
Total	7	..	1	..	3	1	1	..	4	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	23	19	3	13
East.																												
St. Clement	4	1	1	..	4	2	2	2	2	3	..	2	..	2	..	2	..	..	..	..	..	..	..	..	17	18	4	11
South.																												
St. Aldate	4	3	..	1	..	4	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	23	1	13
St. Ebbe	1	4	..	2	1	8	..	4	..	2	..	1	2	1	..	1	..	..	..	..	1	..	1	..	11	54	2	28
Total	5	7	..	3	1	12	..	6	..	2	..	1	2	1	..	1	..	..	..	..	1	..	1	..	24	77	3	41
Extraparochial.																												
County Gaol	2	2	..	2	2	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	25	6	1	4
Workhouse	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	1	3
Total	2	2	..	2	2	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	26	9	2	7
Strangers ill in street.	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	..	..
New Hincksey	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	6	..	7
Total																									123	194	14	115
Total Cases from Choleraic Disease, of which the residences, &c. are known.																									317		..	
Total Deaths																									..		129	

TABLE III.

Table shewing the Number of Cases and of Deaths from Cholera in each week of the Epidemic in 1832 *and* 1849, *and of Cholera and Choleraic Diarrhœa in* 1854.

Week		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1832	Cases	5	17	16	12	16	18	10	6	19	22	14	5	..	..	..	5	..	3	3	..	..	2	1	1832. Last Case, Nov. 28.
	Deaths	4	11	8	4	10	10	3	4	9	9	4	7	..	..	..	..	..	..	2	1	..	..	..	
First Case, June 24.																									
1849	Cases	3	10	21	27	27	26	12	11	5	1	..	1												1849. Last Case, Oct. 28.
	Deaths	2	4	12	11	10	18	9	6	1	1	1	..												
First Case, Aug. 11.																									

		CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	CD	C	
1854	Cases	1	2	1	1	..	..	3	12	12	35	18	36	30	35	22	19	20	37	10	11	6	5	..	..	..	..	12		1854. Last Case, Oct. 30.
	Deaths	..	1	..	1	..	..	..	5	6	19	1	24	2	23	2	11	3	18	..	7	..	5	..	..	..	..	1		
First Case, Aug. 6.																														

For a more detailed account of the Disease in 1832 and 1849, see also Tables IV. V. and VII., with the letterpress which explains them.

Were the attacks in the different localities simultaneous?

§. 6. It has been already stated that the first case occurred in the extreme north of the City, and the second in the south. By a reference to the Table which follows at the close of the 5th Section, it will be seen that not till the fourth week were any other localities invaded. Then two cases occurred in St. Aldate's, also in the south of the Town; and one in St. Clement's, the extreme east. In the fifth week cases occurred in the north, south, east, west, in the centre, and on the outskirts of the Town. In the three following weeks no further cases occurred in the north. In the ninth the Disease reappeared in the north, having retained its hold in all the other districts, and it lingered in the west, in St. Thomas's, and in St. Ebbe's, until the end. We may therefore notice concerning St. Ebbe's, one of our worst and lowest districts, that it was visited in the first week, and was not freed until the last. In St. Thomas's, a parish that needs and receives much care and surveillance, though it did not break out until the fifth week, when once there, it remained till the last week but two.

Proportions of Cases and Deaths in the several Districts.

§. 7. It has been shewn that the Cases of Cholera in 1854 were 194, and the Deaths 115, and the Population being 26,474, the Cases per 1000 are 7.33, and the Deaths 4.34. It has to be considered in what proportions these cases occurred in the several parishes, and whether there was any notable difference in the mortality. First of all, no cases occurred in any College or Hall, in the Infirmary, or in the City Gaol. By far the highest proportional number of Cases of Cholera and the greatest proportional mortality occurred in the County Gaol, and it may as well be also noticed here that among the 128 persons within those walls, there occurred actually a greater number of Cases of Choleraic Diarrhœa than in the whole parish of St. Thomas's, or in the united parishes of St. Aldate's and St. Ebbe's, or in the nine parishes forming the Central Ward. The Cases of Cholera in the Gaol being in the proportion of 47, and the Deaths of 31.25 per 1000: the Deaths being to the Cases in the proportion of 66.6 per cent. The next greatest number of Cases per 1000 occurred in St. Thomas's, viz. 21.81: the next in New Hincksey, 14.04: the next in St. Aldate's, 12.16: St. Ebbe's, 11.60: and the lowest mortality, in proportion to the population, was in the centre of the City, where, throughout the whole of the Central Ward, it was 2.28; but in All Saints', one of the parishes, at the much higher ratio of 10.73.

It seems undesirable to multiply words concerning subjects which the reader may at will study with the help of the subjoined Table. Perhaps the most extraordinary facts there recorded are under the head of Extraparochial; viz. the immunity of the Colleges and Halls, the Infirmary, and the City Gaol, and the exceeding intensity both of the disease and the mortality just adverted to, in the County Gaol: this last most important fact will be considered presently.

TABLE IV.

Table shewing the Cases, Deaths, Population, and Cases of Cholera per 1000 *in* 1832 *and* 1849, *and of Cholera and Choleraic Diarrhœa in* 1854.

PARISHES.	1832. Deaths.	1832. Cases.	1832. Population (Census of '31.)	1832. Cases per 1000.	1849. Deaths.	1849. Cases.	1849. Population (Census of '51.)	1849. Cases per 1000.
NORTH.								
St. Giles	4	5	1736	2·88	3	5	2438	2·05
St. Paul	11	26	1750	14·86	3	5	2634	1·90
Total ..	15	31	3486	8·89	6	10	5072	1·97
WEST.								
St. Thomas	8	14	1700	8·24	10	24	2090	11·48
CENTRAL.								
All Saints	..	2	560	3·57	1	1	559	1·79
Holywell	1	1	944	1·06	..	..	901	..
St. John	..	..	122	..	..	..	107	..
St. Martin	1	2	490	4·08	..	..	449	..
St. Mary Magdalen (exclusive of City Gaol)	2	5	2410	2·08	1	2	2449	0·82
St. Mary the Virgin	..	..	419	..	..	..	391	..
St. Michael ..	..	..	971	..	..	..	1022	..
St. Peter le Bailey	1	2	1236	1·62	6	15	1315	11·41
St. Peter in the East	2	4	1126	3·55	..	..	1144	..
Total ..	7	16	8278	1·93	8	18	8337	2·16
EAST.								
St. Clement ..	36	74	1836	40·30	1	3	2269	1·32
SOUTH.								
St. Aldate	8	13	1452	8·95	11	14	2131	6·57
St. Ebbe	16	31	3123	9·93	30	54	4656	11·60
Total ..	24	44	4575	9·62	41	68	6787	10·02
EXTRAPAROCHIAL.								
Colleges and Halls	..	..	1634	..	..	..	1251	..
Infirmary	..	..	145	..	..	..	150	..
Workhouse	..	..	219	..	4	7	291	24·05
Gaols *	3	3	162	18·52	5	14	233	60·08
Total ..	3	3	2160	1·39	9	21	1925	10·91
NORTH	15	31	3486	8·89	6	10	5072	1·97
WEST	8	14	1700	8·24	10	24	2090	11·48
CENTRAL	7	16	8278	1·93	8	18	8337	2·16
EAST	36	74	1836	40·30	1	3	2269	1·32
SOUTH	24	44	4575	9·62	41	68	6787	10·02
EXTRAPAROCHIAL	3	3	2160	1·39	9	21	1925	10·91
UNKNOWN ..	2	2	..	..	..	..	..	..
Total ..	95	184	22035	8·35	75	144	26480	5·44

PARISHES.	1854. Deaths. CD	Deaths. C	Cases. CD	Cases. C	Population (Census of '51.)	Cases of Cholera in 1000.	Deaths from Cholera in 1000.
NORTH.							
St. Giles (exclusive of St. Paul, Workhouse & Infirmary)	2	1	4	2	2530	·79	·40
St. Paul	0	3	4	5	2634	1·90	1·14
Total ..	2	4	8	7	5164	1·36	·77
WEST.							
St. Thomas (excluding St. Paul, and the County Gaol, but including New Osney)	0	32	19	55	2522	21·81	12·69
CENTRAL.							
All Saints	0	5	0	6	559	10·73	8·94
Holywell	0	0	1	0	901	0·00	0·00
St. John	0	0	0	0	107	0·00	0·00
St. Martin	0	0	2	1	449	2·23	0·00
St. Mary Magdalen (exclusive of City Gaol)	1	1	7	2	2461	0·81	0·41
St. Mary the Virgin	0	0	0	1	391	2·56	0·00
St. Michael ..	0	2	2	2	1022	1·96	1·96
St. Peter le Bailey	1	3	7	5	1315	3·80	2·28
St. Peter in the East	1	2	4	2	1144	1·75	1·75
Total ..	3	13	23	19	8349	2·28	1·56
EAST.							
St. Clement ..	4	11	17	18	2139	8·41	5·14
SOUTH.							
St. Aldate	1	13	13	23	1891	12·16	6·87
St. Ebbe	2	28	11	54	4656	11·60	6·01
Total ..	3	41	24	77	6547	11·76	6·26
EXTRAPAROCHIAL.							
Colleges and Halls	0	0	0	0	650	0·00	0·00
Infirmary	0	0	0	0	101	0·00	0·00
Workhouse	1	3	1	3	304	9·87	9·87
Gaol (County) * ..	1	4	25	6	128	46·98	31·25
Total ..	2	7	26	9	1183	7·61	5·92
NORTH	2	4	8	7	5164	1·36	·77
WEST	0	32	19	55	2522	21·81	12·69
CENTRAL	3	13	23	19	8349	2·28	1·56
EAST	4	11	17	18	2139	8·41	5·14
SOUTH	3	41	24	77	6547	11·76	6·26
NEW HINCKSEY ..	0	7	3	8	570	14·04	12·28
EXTRAPAROCHIAL	2	7	26	9	1183	7·61	5·92
Strangers ill in street	0	0	3	1	?	?	?
Total ..	14	115	123	194	26474	7·33	4·34

* In the *City* Gaol there never was in either Epidemic a case of Cholera, or of serious Diarrhœa, and therefore it is not entered in 1854.

The proportion of Deaths to Cases in Private Houses and Public Institutions.

§. 8. In each of the three Epidemics provision was made for the care of Cholera Cases in a separate Hospital: the general Hospital (the Radcliffe Infirmary) having declined to receive any Cases of Cholera. An opinion had been expressed that in the previous Epidemics the chance of recovery for those who were removed to a distance from their homes was diminished, and therefore in 1854 a careful arrangement was made for providing Nurses and all that might be required at the homes of all the poorer classes attacked: this last arrangement was most efficient and gave entire satisfaction. It was found in 1854 impossible to obtain two separate localities, to serve, one as a House or Field of Observation, and the other on which to erect a Hospital; and therefore there being no power of sending the casual or destitute cases that could not be nursed at home, either to the Workhouse or to the Infirmary, there was no course left but to use a remote corner of the Field of Observation as the site of a Hospital. Some delay took place in giving effect to the division and arrangements in this combined establishment, and it turned out, unfortunately, that more cases than might have been anticipated were necessarily taken into the Hospital at the Field. Several cases also that were sent to the Refuge portion of the Field were taken ill. In the previous Epidemics this last had not occurred. It is not possible to speak too highly of the assiduity of the Medical men who attended the poor at their own homes, or of the satisfactory and highly creditable manner in which the Nurses, under the management of Mr. Cartwright and of a Lady who forbids the mention of her name, discharged a duty to which they were so suddenly called. I may be excused for recording here that this training and discipline helped to make several of them efficient Nurses in the East. Bearing in mind then that these preparations were not made till the Epidemic was at its height, it is interesting to scrutinize the statistics of the result, and to compare them with such corresponding data as are derived from the previous Epidemics. This is done in the following Table.

TABLE V.

Table shewing the Proportion of Deaths to Cases in Private Houses, and in Public Institutions.

	1832. Cholera.			1849. Cholera.			Cholera. 1854.			Choleraic Diarrh.		
	Cases.	Deaths.	Deaths per cent.	Cases.	Deaths.	Deaths per cent.	Cases.	Deaths.	Deaths per cent.	Cases.	Deaths.	Deaths per cent.
Taken to the Cholera Hospital. ..	24	13	54·17	39	25	64·10	‡33	17	51·51	11	..	..
Attacked in Field of Observation.	..	..	..	..	..	..	11	7	63·63	..	..	..
Private Houses.	152	76	50·00	105	50	47·62	146	85	58·22	86	12	13·95
County Gaol.	..	..	..	..	..	..	6	4	66·66	25	1	4·00
Workhouse.	..	..	..	..	..	..	3	3	100·00	1	1	100·00
Total ..	*184	*95	51·63	144	75	52·08	†199	†116	58·29	123	14	11·38

* "Including 8 Cases and 6 Deaths in the parish of St. Giles, unknown whether treated at home or not."—*Greenhill.*

† In the total of this Table for 1854 there are 5 more cases of Cholera and one more death from Cholera than in any other Table. After the other Tables were completed, it was discovered that 4 more cases had occurred in the Field than had been recorded: and that one case returned to me as a death in the Workhouse was really that of a person who was taken ill at the Workhouse, but who died in the Field: and so this case is returned doubly.

‡ The record of the Hospital Cases is not such as could be wished. The Deaths took place: concerning some of the Cases there is uncertainty.

In the first place it is exceedingly satisfactory to learn, that, although the Board of Health was unable to obtain such Hospital accommodation as they desired, the per-centage of Deaths among the Hospital Cases, according to the data furnished to the Writer, was less than in either of the previous Epidemics. The Cases *taken there* appear to have died at the rate of 51.51 per cent.: those taken ill in the Field at the rate of 63.63 per cent. Both taken together at the rate of 54.54 per cent. It is somewhat remarkable that an altogether different result obtained in Private Houses, the County Gaol, and the Workhouse, for all the Workhouse cases reported to the Writer are returned as Deaths. Of the 6 cases in the Gaol 4 died, and of the 146 treated in the Private Houses 85, or about 58 per cent. died. This result of the Cases treated in the Private Houses seems to confirm an opinion which the Medical Practitioners in the City generally expressed, that the Cases in this Epidemic were more severe than those in either of the previous ones, and it absolutely contradicts one which I am almost ashamed to say I have occasionally heard, that Cases were returned as Cholera which scarcely deserved the name.

The only further remark which need be made in commenting on this Table, and one which I have earnestly and respectfully urged to the best of my ability, but hitherto without effect, is, that when we consider that several cases were taken ill in the Field of Observation in 1854, whereas none were so attacked on previous occasions, we should not be left to the shift of procuring accidental Hospital accommodation for Epidemic disorders; but that there should be, for the safety of all, efficient wards *always ready* to meet such lamentable emergencies. That much the most convenient course would be for the general Hospitals of the country to maintain such wards in connection with them, (wherever, at least, they have open space, and are not located in the middle of a dense population,) is so obvious that no arguments are needed to enforce it.

The Cholera in relation to Sex, Age, and Occupation.

§. 9. However interesting it might be to investigate and to state in minute detail the precise relation of the number of attacks and deaths to the Sex, Age, and Occupation of people, yet the result of the procedure would be in no way proportional to the labour. A population of 30,000 is too small an one to permit such a subdivision as must be made before any deduction, practically valuable, concerning the real effects of Sex, Age, and Occupation could be made. The *general* results deducible from the reported Cases may be given as follows.

TABLE VI.

Ages of Males and Females attacked by Cholera and Choleraic Diarrhœa in 1854.

		All Ages.																				
		Both Sexes.	Males & Females.	Under 5 years.	5—	10—	15—	20—	25—	30—	35—	40—	45—	50—	55—	60—	65—	70—	75—	80—	85—
Cholera.	Cases.	194	M 86	14	14	9	4	2	4	9	3	7	8	2	2	2	3	2	1	0	0
			F 108	15	4	7	5	10	5	12	11	6	5	9	4	3	1	3	1	0	0
	Deaths.	115	M 49	12	4	5	2	2	2	2	1	3	6	2	1	2	2	2	1	0	0
			F 66	10	7	3	2	3	4	7	8	4	3	6	2	3	0	3	1	0	0
Chol. Diarrh.	Cases.	123	M 63	6	3	4	5	4	7	7	5	6	1	6	3	3	2	0	1	0	0
			F 60	7	2	0	0	3	4	4	4	9	5	8	6	3	3	0	1	0	1
	Deaths	14	M 6	3	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0
			F 8	4	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	0	0

From this Table it may be noticed that of the 194 Cases of Cholera, 108 were Females, and only 86 Males, of all ages. Inasmuch therefore as the population of Oxford in 1854, 26,474, contained 13,197(?) Males and 13,277(?) Females, it would appear that 6.52 in each 1000 of Males, and 8.13 in each 1000 of Females, were attacked; and inasmuch as of the 115 Deaths, 49 were Males and 66 were Females, it follows that the Males died in the proportion of 56.9 Deaths to 43.1 Recoveries, and the Females in proportion of 61.1 Deaths to 38.9 Recoveries. There was therefore a greater probability among the Females that they would have the Cholera; and of those who had it, there was also a greater probability that they would recover if they were Males.

The Mortality varied according to Age.

We learn that in London in the same Epidemic between the ages of 15—25, of 100 persons attacked 34.9 died. With us the mortality between the same ages was at the rate of 42.85. In London between the ages 25—35, the mortality was 35.4 per cent. = with us 50. In London the Deaths in proportion to the Cases between 65—75, were 58.2 to 100 Cases—with us between the same age, in the proportion of 77.77 in every 100 persons attacked.

Mortality according to Occupation.

The Occupations of the attacked and destroyed having been examined and sifted, I am satisfied that no useful result would be gained by attempting to draw any elaborate conclusion from the inquiry. From the survey the most obvious facts are that the four first, the sixteenth and the seventeenth, classes of the Census Classification, (all persons of more or less "station in life" or ease,) probably suffered the least: 8 in these classes are noted as attacked, but of the 8, 6 died: the stress fell, numerically the heaviest, upon the labouring classes in all their ramifications: they died in the proportion of 56 in each 100 attacked. But in Oxford, especially during the absence of the University, the number of residents of the five just-named classes is proportionally small; and therefore those engaged in business and in labour, proportionally large. One Medical man died of Cholera; he had neglected serious Diarrhœa, knowing and noting it, for nearly a week. He was not engaged in attendance on Cholera. Another who had attended Cholera cases was in danger from a severe and protracted Choleraic Diarrhœa. Several other Medical men suffered from Diarrhœa. One returning home at night was so frequently affected on his way that he could scarce reach home. The Nurses were tolerably exempt; but one died. The Washerwomen did not suffer as a class, as far as I can learn. But this will be spoken of hereafter in Chapter VI. During the ninety days which we may say to have been the period of the Disease, five men were engaged in

emptying cesspools. They worked during nearly forty nights of the ninety. Not one had even Diarrhœa. This last circumstance has been noted in other places, and suggests a very important question concerning the noxious or innoxious nature of collections of ordure, when freely exposed to the open air.

It need hardly be repeated that Oxford is not a place large enough to allow us to draw any safe conclusions concerning the liability of certain Occupations to Cholera, or their exemption from it, or to form data for the proportional mortality of various ages.

The Progress of Diarrhœa and Choleraic Diarrhœa.

§. 10. However urgent the other symptoms, no case was, I believe, returned as Cholera in which the evacuations were bilious. Of the more serious forms of Diarrhœa wherein cramps, vomiting, and even more or less collapse would occur, there were many cases in the City. But the mortality was very small compared to that of the Cholera. It appeared *generally* in the same localities, at the same times, and with nearly the same intensity at the different periods, as the genuine Cholera. In consequence of the severity of some of the cases, it appeared desirable to tabulate those, of which the names and residences have been returned, with those of the Cholera, so that the reader can in each of the Tables follow them through the Epidemic of 1854. They were not so examined in the previous Epidemics.

First, then, with respect to the Diarrhœa.

If we examine what is certainly known of the amount of Diarrhœa, we have some curious information. Dividing the Epidemic into four periods of three weeks* each, commencing with August 6 and ending October 22, it appears that we have no certain record concerning the first five weeks, or until the last week of the second quarter. In that week there were returned 1313 Cases of Diarrhœa: in the third quarter 2603 Cases: in the last quarter 527. These Cases, it will be remembered, do not include Choleraic Diarrhœa; and they do not include Cases prescribed for at the Infirmary.

Now in the sixth week there were out of every 1000 persons nearly 50 persons prescribed for, on account of Diarrhœa alone, by the Medical men, independently of the Chemists: in the third quarter, (the seventh, eighth, ninth weeks,) nearly 100 in every 1000: in the last quarter 19.90 in every 1000.

If then we assume that in the second quarter the attacked were the same as in the third, (as they were nearly with respect to Cholera, and there is reason to believe that there were actually a greater number of Diarrhœa Cases in that quarter,) and that the first quarter had as many Cases as the last, then it follows

* There was an isolated Case in the thirteenth week not reported to the Board, and not entered therefore in the Meteorological Diagram; see below.

that at the least 6260 Cases were attended by the regular Practitioners on account of Diarrhœa alone. Some of the Cases were perhaps relapses; but as I have stated, the applicants at the Infirmary (more than 400) are not included. There cannot have been therefore less than a fourth of the population, at the lowest estimate, actually treated by the Medical men for this form alone in the manifestation of the Pestilence. That very many more were under its influence may with equal certainty be concluded.

Secondly, with respect to the severer forms of Diarrhœa, returned as Choleraic Diarrhœa.

Of these Cases 123 are entered in the first Table. The Deaths among these 123 were 14; or the proportion of 11.5 Deaths to 100 Cases. But it is known that many more occurred whose names and addresses were not returned, and which therefore I could not tabulate in respect of their residence, &c. The numbers returned to the Board in the second quarter of the Disease were 165: in the third quarter, 61 Cases. The Deaths therefore were not proportionally as numerous as would appear by the weekly table: for all the Deaths of the Epidemic are recorded, but not all the Cases. And taking the reported Cases in the two middle quarters as 226, and the Deaths 14, we find the Deaths in Choleraic Diarrhœa to have been only 6.2 in every 100 Cases. No fatal Case of *simple* Diarrhœa has been returned.

In the Meteorological Diagram at the end of the volume the general progress of Diarrhœa and Choleraic Diarrhœa, in relation to the Cholera, may be most easily traced*.

Comparison of the Epidemic of 1854 *with those of* 1832 *and* 1849.

§. 11. The general result of these Choleraic visitations of Oxford may be given in a few words.

The first interval of freedom from the Pestilence was seventeen years; the second interval was five.

The Cases per 1000 of the inhabitants in 1832 were in round numbers 8: in 1849 only 5: in 1854, 7.

If we exclude from each year the Cases in St. Clement's, whereon the Disease fell so heavily in 1832, the years of Pestilence claim, in the order of their precedence, 5.4, 5.8, 7.2 cases per 1000 of the inhabitants.

The recoveries in proportion to the deaths were in the proportion of

51.63 deaths to 48.37 recoveries in 1832.
52.08 deaths to 47.92 recoveries in 1849.
59.27 deaths to 40.73 recoveries in 1854.

* The Reader should bear in mind that the numbers in that Diagram correspond with those returned to the Board, not with the more limited identified Cases in the *Tables*, as is explained above.

Cases of Cholera in the several localities in Oxford in 1832 *and* 1849, *and of Cholera and Choleraic Diarrhœa in* 1854.

Northern Parishes.	'32	'49	'54 CD	'54 C
St. Giles.				
Best's Yard	..	2	..	..
Blenheim Place	..	1	1	..
Parker's Square	..	..	..	1
Pauling's Yard	1	..	..	..
Plantation Road	3	..	..	..
St. Giles's Road West	..	2	1	1
St. Giles's Street	..	..	1	..
Near the Church	..	..	1	..
Unknown	1	..	..	..
St. Paul.				
Cardigan Street	..	..	2	..
Jericho Gardens	22	..	..	2
Nelson Street	..	2	..	..
Portland Place	..	2	..	1
Union Street	..	1	..	..
Near University Press	1	..	..	..
Near Walton Terrace	3	..	..	..
Walton Road	..	..	1	1
Wellington Street	..	..	1	1
Total	31	10	8	7
Western Parish.				
St. Thomas.				
Ayres's Yard (Brazier's Yard)	..	..	1	..
Billing's Row (Peacock Yard)	..	1	..	2
Blay's Yard (South Court)	..	1	..	3
Church Lane	..	..	1	..
Corbett's Yard	..	..	..	2
Faulkner's Row	..	1	..	1
Fisher Row	1	1	2	2
Green's Yard (Abbey Row)	..	..	2	3
Hamel	2	2	1	4
High Street	1	7	2	2
Hollybush Row	..	1	1	2
Hythe Bridge	..	2	1	4
Lamb and Flag Yard	..	..	2	..
Orpwood's Row (Bookbind. Yd.)	2	4	..	3
New Osney	..	..	2	6
Osney Lane	3	1	..	3
Park End Street	..	..	2	4
Payne's Yard	..	1	..	..
Robert's Yard	..	..	1	..
Should. of Mutt. Yd. (Norman Ct.)	1	1	1	3
Steane's Yard (Park End Place)	..	..	..	3
Tawney's Yard (Holyfield's Yd.)	..	..	..	2
Vaughan's Yard (Wareham Ct.)	..	1	..	1
Unknown	4	..	..	..
Total	14	24	19	55

Central Parishes.	'32	'49	'54 CD	'54 C
All Saints'.				
Amsterdam Court	..	1	..	..
Carter's Yard	..	..	..	3
High Street	1	..	..	..
Turle Street	..	..	..	3
Unknown	1	..	..	..
Holywell.				
Holywell Street	1	..	..	..
Near the Church	..	..	1	..
St. Martin.				
Cornmarket Street	1	..	1	1
St. Aldate Street	..	..	1	..
Unknown	1	..	..	..
St. Mary Magdalene.				
Bound's Yard	1	..	..	..
Broad Street	..	..	1	..
Broken Hayes	3	..	..	..
Friar's Entry	..	..	1	..
George Street	..	..	2	1
Magdalen Street	..	..	2	..
Nunney's Buildings	..	1	..	..
Red Lion Square	..	1	1	..
St. John Street	..	..	..	1
Unknown	1	..	..	..
St. Mary the Virgin.				
Oriel Street	..	..	..	1
St. Michael.				
Cornmarket Street	..	..	1	1
Market Street	..	..	1	1
St. Peter-le-Bailey.				
Alder's Yard	..	2	..	..
Arnold's Passage (Victoria Place)	..	2	..	..
Buckland's Row	..	..	1	1
Castle Street	..	5	2	1
Coach and Horses Yard	..	..	2	..
Faulkner's Row	..	5	..	..
Queen Street	1	..	1	..
Pollard's Yard (Albert Place)	..	..	1	3
St. Ebbe Street	1	1	..	..
St. Peter-in-the-East.				
Fidler's Yard	1	..	..	..
Gravel Walk	1	..	..	..
High Street	1	..	1	1
King Street	..	..	2	..
Long Wall	1	..	1	..
Tarry's Yard	..	..	..	1
Total	16	18	23	19

TABLE VII.—(Continued.)

Cases of Cholera in the several localities in Oxford in 1832 *and* 1849, *and of Cholera and Choleraic Diarrhœa in* 1854.

	'32	'49	'54	
			CD	C
Eastern Parish.				
St. Clement.				
Alms' House	1	..	..	1
Bath Street	6	..	3	4
Caroline Street	26	1	5	1
Cherwell Street	6	1	2	3
Cherwell Terrace	..	..	2	..
Opposite Old Church	1	..	..	..
Near Cowley House	1	..	..	..
Cowley Road	5	..	2	..
George Street	4	..	1	..
George's Yard	7	..	..	3
High Street	13	..	1	5
Hitchcock's Row	..	1	..	..
Iffley Road	..	..	..	1
London Place	2	..	..	..
New Street	2	..	..	..
York Place	..	..	1	..
Total	74	3	17	18
Southern Parishes.				
St. Aldate.				
Alms' House	1	..	..	..
Brewer Street	..	..	..	1
Bridewell Square	..	..	1	..
Carter's Yard	2	2	..	1
Opposite the Church	1	..	..	..
Dragon Yard	..	..	1	..
English's Yard	..	..	6	..
Floyd's Row	..	..	1	3
Nelson's Yd. (Nelson's Passage)	..	..	1	..
Pembroke Street	1	..	..	..
Pipe-maker's Yard	1	..	..	..
Rose Court (Rose Place)	..	3	..	..
St. Aldate Street	1	3	1	3
Sheppard's Row	1	1	1	1
Sparke's Yd. (St. Aldate's Place)	1	3	1	5
Toovey's Yard (School Yard)	1	..	..	1
Treadwell's Gard. (Speedwell Pl.)	..	..	..	1
Wyatt's Yard	..	2	..	6
Boat-House on the River	..	..	..	1
Unknown	1	..	..	..
St. Ebbe.				
Abbey Place	..	3	..	..
Beef Lane	1	..	..	..
Carried over	12	17	13	23

	'32	'49	'54	
			CD	C
St. Ebbe (continued)				
Brought up	12	17	13	23
Blackfriars' Road	1	5	..	7
Ditto. Eyles' Buildings	..	3	..	..
Ditto. Hunt's Row	..	..	..	1
Ditto. Hind's Yard	..	..	..	1
Ditto. Waterloo Buildings	..	..	..	1
Brewer Street	..	..	..	1
Bridge Street	1	..	..	1
Bridport Street	..	2	..	1
Near Bridport Street	..	1	..	..
Bull Street (New Street)	7	4	1	1
Castle Street	..	..	..	2
Church Street	2	1	3	3
Commercial Road	..	..	..	2
Friars' Street	3	6	1	..
Friars' Wharf	..	..	2	3
Gas Street	..	1	..	14
Godfrey's Row	9	..	..	3
Lee's Yard	..	1	..	..
Littlegate	4	1	1	..
Mazey's Yard	..	..	1	6
Milbank	..	6	..	..
New Street or Cross (Union St.)	..	2	..	..
Paradise Square	..	..	..	1
Paradise Street	..	4	..	2
Penson's Gardens	..	3	..	..
St. Ebbe Street	..	..	1	1
Speedwell Street	..	10	..	1
Speedwell Terrace	..	1	..	1
Union Place	..	..	..	1
White's Yd. (Chaundy's Yard)	..	..	1	..
Wood Street	3	..	..	..
Total	42	68	24	77
New Hinckesey	..	..	3	6
Thames Street	..	..	..	2
The Weirs	2	..	..	..
Total	2	..	3	8
Extra-Parochial.				
Workhouse	..	7	1	3
County Gaol	3	14	25	6
Strangers seized in the street	..	..	3	1
Total	3	21	29	10
Unknown	2	..	..	..

N. B. After these Tables were in type the Names of many Yards were changed by order of the Commissioners. The New Names are generally added in parentheses.

The Disease, therefore, excluding the exceptional case of St. Clement's, was more severe numerically, and more fatal in the last than either of the previous Epidemics, and returned, as has been noted, after a much shorter interval.

In Table IV. a summary is given of all the Cases of Cholera and of Choleraic Diarrhœa in their respective localities. They are brought into comparison with Dr. Greenhill's Tables for 1832 and 1849, reproduced in parallel columns. A more detailed account of the localities is furnished in Table VII, and to that Table the reader is referred. This reference is all that can be required, if at the same time the Map of Oxford, at the beginning of the volume, be studied for the purpose of noting the localities stigmatized as unhealthy by the sanitary writers before alluded to.

A few words then will sum up these Tables. The Cholera occurred with nearly equal intensity in the Northern Parishes in all the Epidemics, if we exclude one spot, Jericho Gardens, where it raged in 1832, when once it entered there. It has been pointed out that a better class of tenants inhabit them now than twenty-five years ago. But this district (St. Paul's) is still either wholly undrained, or insufficiently drained.

If we were to judge of St. Thomas's by the relative intensity of the Epidemics in the Parish, we should say that it was becoming worse and worse. There occurred in the three Epidemic years respectively, 14, 24, 55 Cases. But we know that this parish though poor is not neglected: it is thoroughly visited and assiduously cared for by its Clergyman; and every good pastor exercises a beneficial influence on the temporal condition of his flock. We know besides that some yards, formerly execrable, are improved. But the City water was in 1854 distributed there, and this may in some instances have been the cause of the increase of the disease. It is remarkable that every yard and street which was attacked in 1832 and 1849, was again visited, with one exception, in 1854.

St. Clement's suffered *more* in 1854 than in 1849, but much less than in 1832. The great difference between the Epidemic of 1832 and that of 1849 must certainly be presumptively attributed to the condition of the Water supply: this is explained in a succeeding chapter. Possibly the increase of intensity in 1854, if to be accounted for, may be accounted for by the foul and low state of the river.

The Southern Parishes suffered in 1854 nearly twice as much as in 1832, but only a sixth more than in 1849. The Water supply was bad; some of the wells were foul to a degree; one stank; some were dry; and the City water wherever distributed was unfit for use at such a time. The drainage is as bad as it has ever been. The Trill Mill stream, near whose banks disease has long been known to flourish, is uncovered still.

CHAPTER II.

On the Cholera in the Neighbourhood of Oxford.

§. 1. While the Epidemic was in Oxford, deaths from Cholera occurred also in the neighbourhood. A survey of these may show something of the manner in which the Epidemic was spread in this part of our Island; and at all events it will point out the share which Oxford had in receiving or in imparting the Disease: it may also help to elucidate some other points in the natural history of Cholera.

Inquiries have been made into the History of the Cases which occurred in all the Registration Districts of Oxfordshire, excepting Henley; and in those of Berkshire, called Faringdon, Abingdon, Wantage, and Wallingford*. In each of these such questions were put to Medical Practitioners in each place as were likely to elucidate the mode of arrival and spread of the Disease. The statements that follow will be best understood by referring to the Sketch-Map, Plate 4, "District round Oxford." In this Map the course of the several valleys of the Isis, Cherwell, and Thame, with their tributaries, and the situation of the principal towns in or near them are represented. The scale of the Sketch is about a quarter of an inch to a mile.

Deaths from Cholera occurred in Lechlade, Brize-Norton, Abingdon, Harwell, Brookhampton, Little Milton, Albury, Oakley, Brill, Winslow, Banbury, Little Bourton. The names of all these places are surrounded in the Map by an oval line. After the best inquiry that I have been able to make, I cannot ascertain in what manner the Cholera invaded these places, or from what cause.

On further reference to the Map it will be seen that double lines radiate from Oxford to certain places, viz. to Woodstock, Besselsleigh, Wantage, Steventon, and Hailey. The Deaths which occurred in these places may be traced to immediate personal communication with Oxford.

At other places it will be noticed that the double lines terminate in a star. These places are Garsington, Hincksey, and Witney, through Hailey. In these places it would appear that the Cholera having been conveyed from Oxford, was communicated directly or indirectly from persons who had been in Oxford to others who had not; it then spread with more or less intensity.

Lastly, Headington is connected with Oxford by a single line, which indicates that the Cholera spread at Headington, probably but not certainly, in consequence of communication with the City.

The above brief summary clearly marked in the Sketch-Map is of course the sum and substance of much inquiry. I subjoin parts of the Evidence which has led to these conclusions.

* See Population Tables I. Divisions II. and III. 1852.

Ist, then, with respect to the class in which Cholera occurred without a trace of communication with Oxford, it need only be said that I am indebted to highly respectable Practitioners in each locality for sifting the several Cases concerning which this negative conclusion is arrived at.

As to Lechlade there was but one Case. Mr. Powell states, that the child in whom it occurred had eaten largely of wild fruit the day before, and died within twelve hours.

I am informed concerning the Brize-Norton Case, that there is some doubt whether it was Asiatic Cholera.

With regard to Abingdon, Mr. Martin informs me that there is no reason for supposing that the person who first died of Cholera had either been in a Cholera locality, or been in communication with those who had; but a Nurse who attended upon him died.

At Harwell two Cases occurred in the same house, one within a week of the other; the first being a child, the second its mother; the house being unclean and having a foul drain. Mr. Lightfoot informs me there is no reason whatever for supposing they had communicated with infected places.

The Deaths which occurred at Little Milton, in the Thame district, cannot be traced to communication with infected sites. They afford an excellent illustration of Cholera originating, to all appearance, spontaneously, and then either spreading to persons in immediate contact with the first attacked, or to persons placed in circumstances identical with those of the first Case. Mr. Kimpton has carefully investigated their history. There were five Deaths in one family: the first on September 21, the second and third on the 25th, the fourth on the 27th, the last on the 2nd of October. A child aged four was first attacked. No person belonging to the house had been in an infected place, no articles had been received, nor had any person visited them from such a place. The site of the cottage is healthy, well drained, situated on a lime rock, and there was little illness in the village. The "Marriotts' cottage" was one of two joining each other, but unconnected with and at some little distance from any other dwelling. The family were crowded at night, ten persons sleeping in two small rooms. The only Cases in Little Milton were those in the family where the first Case occurred. The Nurses and Attendants washed the linen and removed the evacuations. All had Diarrhœa, one severely, but none had Cholera. There is no ground for supposing that the food of this family had any share in producing the Disease. There is a good well near, which could not be contaminated from any source, except from an old burial-ground many yards distant, unused from the time of Cromwell.

Mr. Barker, the Union Medical Officer of Brill, has related to me the circumstances connected with the spread of the Disease in his district. They are pecu-

liarly interesting. It would seem as though every known or supposed means of favouring the extension of the Disease had existed in this generally fine and healthy village. The first person attacked was a labourer, who had Diarrhœa, followed by severe Choleraic symptoms: he recovered; but the woman who attended upon him was attacked with Cholera, and died in six hours. This is an instance of severe Diarrhœa in one person having some probable connection with Cholera in a second, neither having been in a Cholera locality. The third Case occurred in a woman who had been in or near Oxford, at the time when the Epidemic there was about at its height. She had also attended the funeral of the Nurse just named. The fourth person washed the clothes of the third, and died in twelve hours: and that same night, the 1st of October, a woman who had been near none of these Cases, living at a distance from them, but who was wife to a man who cleaned out the cesspools, had Cholera: she recovered. It is unnecessary to seek out all the Cases which subsequently occurred; but it must be named that a fortnight after this last-mentioned date a woman died, near whose house privy soil and sewer filth had been spread as manure; and not only did she and other neighbours suffer and die, but many had Diarrhœa in various degrees of intensity.

Mr. Walker informs me concerning the first victim of the Disease at Oakley, that there is no reason whatever for supposing that he had been in any kind of communication with a Cholera district. He was taken ill while at work in a field at 8 in the morning, and died at 8 at night. But this man lived in a very poor and dirty cottage, in one room of which, (and that room singularly unclean,) slept father, mother, a grown-up son, a grown-up daughter, and two children. Of these the boy died, the son was attacked and recovered, the mother, being the nurse of all, was taken ill and died: and a woman that occasionally helped her had Diarrhœa of a severe form, but was saved. No other Cases occurred in the immediate neighbourhood. What conclusions may be drawn from these and the like touching incidents will appear in the sequel.

At Winslow a tramp arrived from Stony Stratford, and put up in a crowded lodging-house. He had severe Diarrhœa and died. But, as I have noticed in other similar cases, where the spread of the Disease might have been anticipated, no other person, so Mr. Denne informs me, materially suffered.

At Little Bourton one person died of Cholera. Mr. Chesterman was informed by his widow, that her husband had been in Banbury, and in the street where nearly all the Banbury Cases occurred, on the day previous to his attack. In connection with him no other Case arose.

There were several fatal Cases of Cholera at Banbury, and to these hereafter it will be necessary most especially to revert. A man was employed one night in emptying a cesspool. The day following he died, to use Mr. Douglas's words, with

Choleraic symptoms. The next person attacked was the Nurse, his sister, who lived in a perfectly healthy part of the town, and died after a few hours' illness. All the Cases which occurred subsequently to these two were in persons who either were engaged in opening a sewer in a low locality, or lived in its immediate neighbourhood. Mr. Douglas adds, that there is not the slightest reason to suppose that any of the persons who had Cholera at Banbury had been to Oxford, or to any other place in which Cholera was prevailing.

IInd. We have next to consider the class of localities in which a death from Cholera is registered, and in which that death may be shewn to have been attributable to the existence of the Disease in Oxford, but which did not contaminate the district where it occurred. These places are indicated in the Map by a double line connecting them with Oxford. They are Woodstock, Besselsleigh, Wantage, Steventon, and Hailey. There was but one Case at Woodstock. Of him Mr. Palmer says, that he died on Monday, October 2nd, having been in Oxford on the previous Thursday, and having suffered from Diarrhœa from that time, and having passed through Abingdon on his way. He was an itinerant small dealer at fairs.

At Wantage one fatal Case occurred. This happened in a man who left Oxford about the same time as the man who died at Woodstock. He was an irregular liver and in a state of extreme poverty. He had Diarrhœa when he reached Wantage, having had it for two days. When Mr. Barker saw him, he was in a state of collapse, and never rallied. Of his history it is important to observe, that he was lodged in a common lodging-house, that many persons were therefore in contact with him, and that the discharges from the stomach and the bowels were left for some time unremoved.

The labourer who died at Steventon had just returned from Oxford, and died soon after reaching his home.

The only two localities remaining under this head are Besselsleigh and Hailey. Both of these are of peculiar interest for the following reasons. First of all, with regard to the one Case that occurred at Besselsleigh. Harriet Thomas, aged 22, had lived in Oxford for some time and nursed a family named Maizey, who had Cholera. She left Oxford feeling ill, went through Abingdon, and late in the night on which she reached Besselsleigh was attacked with vomiting and purging, and died in collapse in about twelve hours. Now it is remarkable enough that a man of Hailey, named Robert Rhymes, came from thence to Oxford to seek work, called upon the said Maizey, who is the owner of a horse and cart employed in odd work, and who has acquired, by great industry though in weak health, such property as he possesses. He lived in a miserable spot in St. Ebbe's, called Maizey's Yard. So miserable and so foul was one of the dwellings in this place, that the writer, in going to see a man there in extreme collapse, thought it necessary for the safety

of those to be employed about the Case to break through a portion of the roof, in the hope of securing some ventilation and of removing the Choleraic stench and effluvia. To this place the man of Hailey repaired, and saw Maizey the first day that he was up and about after emerging from Cholera. He engaged himself to Maizey and went home. This happened on Wednesday. He was taken ill with unmistakeable Cholera, and seen by Mr. Edwin Batt of Witney. He recovered, and no other case occurred in Hailey. But the first Case which occurred in Witney occurred in the person of Richard Plummer, who conveyed medicine to Robert Rhymes at Hailey while he was ill.

IIIrd. Whereas then the Cholera which occurred at Hailey, in a single Case, without spreading there, must be considered as having been conveyed from Oxford, so the cases at Witney may be stated to have been mediately, through Hailey, derived from the same source. It is not proposed to offer here any explanation of the remarkable facts detailed in the last few words, but merely to state them; nor is it desirable in this place to give a complete account of the course of the Cholera through Witney. Some details will be found in the Appendix.

What may be stated here however is this, that the first Case occurred in a low, damp, unclean, crowded house; in the same house and in the same yard in which it appeared in the Epidemic of 1849. And generally it may be remarked, that the Epidemic followed the same track, and showed the greatest intensity in the same parts of the Town as on the previous occasion; as I have learnt from the two brothers, Messrs. Edwin and Augustin Batt, whose well known kindness and sagacity were actively employed during the severe visitation of their town.

Garsington was immediately connected with Oxford during the Epidemic in the following manner. The man Ruffle, who was the first person attacked, had not been into Oxford; but on September 12 he received into his house two persons, one a man who had been engaged about persons suffering from Cholera, and the other his son convalescent from the Disease. The latter, still weak, occupied his father's bed during the day, and up to the time at which Ruffle got into it for the night, in the course of which he was attacked with Cholera and died in a few hours. The next night Ruffle's wife was attacked and died, and the day following his grandson was attacked, but recovered. For all these facts I am indebted to the sifting care of Mr. Cogan of Wheatley.

Now Ruffle's dwelling was the half of a double cottage. The back of one end of this building was but five yards distant from the front of a similar tenement containing three dwellings. They were inclined to each other at an angle, so that the other end of Ruffle's cottage was fourteen yards apart from the corresponding end of the other. There were therefore five dwellings under these two roofs. The second cottage in Garsington which was attacked was that under the same roof with

Ruffle's. The third was the one five yards from the back of his dwelling. And the fourth attacked was under the same roof with the third, that viz. which was fifteen yards from the second. All these were low, wet, crowded, filthy. Eleven Cases of Cholera occurred in them, besides Cases of bad Diarrhœa. There were four Deaths. From the nature of the locality all were in communication with one another. Of thirteen neighbours and friends engaged about the first and second Case, or led to the house by curiosity, eleven were attacked with Cholera within a few days. Two out of four men who carried the first and second corpse to the grave were attacked. One died after a few hours' illness: the other of consecutive fever. A young woman who nursed a neighbour was taken ill in her own house. Her bed was afterwards occupied by two of her brothers, and both were attacked on the first night that they slept in it.

The last spot which is connected with Oxford by the double lines and the star indicating the spread of the Disease is New Hincksey. The facts relating to it have been thoroughly investigated by Mr. Hitchings, and are simple enough. New Hincksey is a cluster of houses about half a mile to the south of Oxford, separated by the Isis and adjoining meadows. It is of course in constant communication with Oxford. A man died of Cholera in the City. His widow took his clothes and bedding, saturated with evacuations, to New Hincksey. She there washed them and hung them up in the garden at the back of her house to dry. On the day following a child in the adjoining house was taken ill, and subsequently seven others sickened in the three houses of which the first was the centre.

What is written above is an epitome of the most important facts that I have been able to ascertain of the progress of Cholera in a district of which Oxford may be called the centre. The conclusions which may be drawn from this history, and the hypotheses which may be founded upon it, will be given in another section.

CHAPTER III.

Local Causes which may have influenced the Progress of the Disease.

§. 1. All that need be said under this head will be dismissed in a few words. It has been surely shown by sanitary writers that there is some connection between bad living, using the words generally, and disease; and that the Fever localities (taking Fever as a type of Endemic Disease) are generally, though not invariably, the same as the Cholera localities. To go over this ground in detail would be tedious. As far as Oxford is concerned, the reader may soon satisfy himself on the point by referring to Mr. Ormerod's paper on the Sanitary Condition of Oxford, or by inspecting again the Map of Oxford at the commencement of this Memoir,

and comparing for this purpose the marks which designate Cholera, and the marks which show foul and diseased spots, according to previous sanitary writers on Oxford.

That Oxford may however furnish her chapter on this subject, to the general sanitary survey of the Country, the most striking particulars which were noticed during this Epidemic may be briefly stated, under the heads of Personal Condition of the People: State of their Dwellings: Effects of Elevation: Condition of the Drainage and Water Supply.

General Condition of the People.

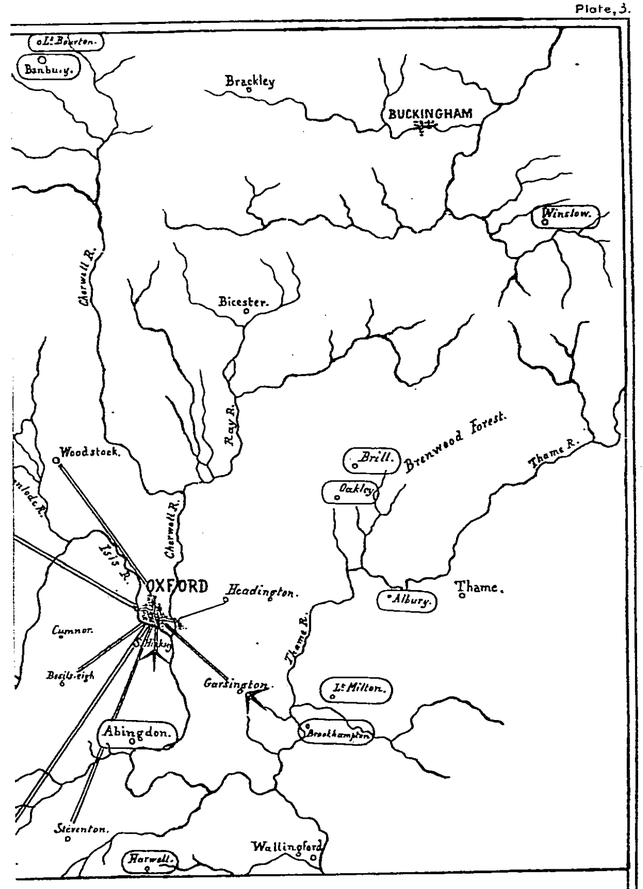
§. 2. It is well known that the business of Oxford is in a great measure dependent on the presence of the University. The long vacation is therefore a great trial to the poor or the improvident. The Cholera occurred towards the close of the vacation. Many families were wholly without work. It was not in my power to ascertain rigorously in what proportion the families who had no work or little work suffered from Cholera, when compared with the more prosperous; but I am able to state positively, that the Diarrhœa and Cholera were most rife, speaking generally, in the poorer places, and that in some alleys when meat was given, the Diarrhœa was arrested.

State of the Dwellings of the Poorest Classes.

§. 3. For residents in the City of Oxford it would be useless to furnish any description of the dwellings of the less affluent and of the most indigent of our people; and unless there were some tale of horror to unfold, to all others uninteresting. But in my judgment there are few, if any, *very bad* dwellings in Oxford, as the civilized world has counted badness. In London and Edinburgh, and other large towns, I have visited places incomparably worse than any that I know of here at present: though even here, I have seen dogs' litter from an upper room used as a kennel for fancy dogs, fall through the gaping planks on the bed of a woman in her confinement, on the floor below*: but nothing of the sort is now in my knowledge. To say that in all the alleys the houses are good, would be untrue; but to designate them generally as not fit for habitation, unjust. Many of even the lowest class of houses are airy, open, with gardens behind them; some with water-closets, carefully kept by benevolent landlords. But in St. Thomas's and in St. Ebbe's also are individual rooms and staircases whose existence is to be deplored. And there is scarcely any remedy for some of these places, but the remedy which followed the Plague of London. There is no mending them. Several private persons some years since, and before the New Lodging House Act had passed, took one of the worst alleys

* The place has been altered some years, and the owner is at rest.

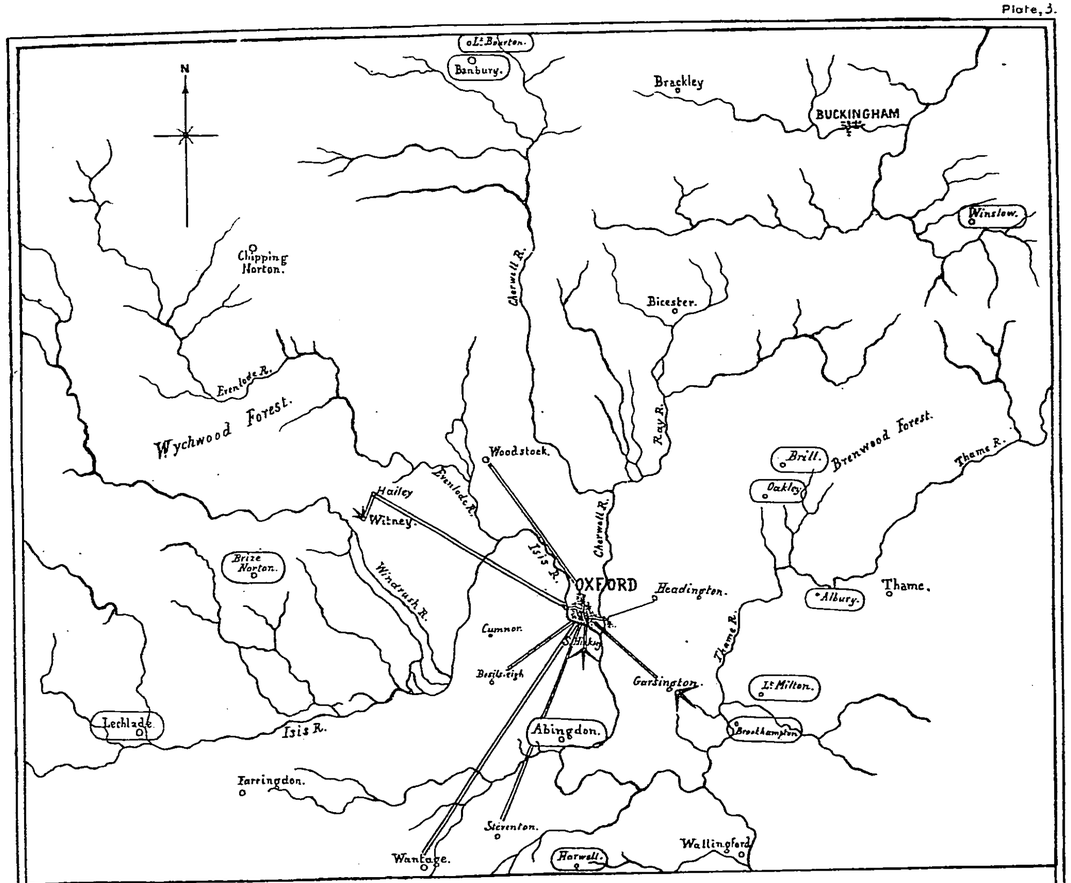
Plate, 3.



ICT ROUND OXFORD,

Aclands Memoir on Cholera in 1854.

b in an oval Line, had no death from Cholera
an oval Line had one or more deaths from Cholera
double line passes from Oxford had one death dependent
Oxford - but the disease did spread
double line ending in a Star received the disease from
it spread.



DISTRICT ROUND OXFORD,

to Illustrate Dr Aclands Memoir on Cholera in 1854.

The Towns not enclosed in an oval Line, had no death from Cholera
The Towns enclosed in an oval Line had one or more deaths from Cholera
The Towns to which a double line passes from Oxford had one death dependent on communication with Oxford - but the disease did spread
The Places that have a double line ending in a Star received the disease from Oxford and when there it spread.

in the Town to make Model Lodgings; but in consequence of the high price we were obliged to pay, and the small rents we obtain, it has commercially failed; and though we have uprooted a bad population, we have still no Model Houses. The fault of many of the lower tenements, built a century or more ago, is radically implanted in them. The rooms are too low; the outlet too confined; they are in some places built back to back, and have no thorough ventilation. Some improvement has here and there been gained by placing Arnott's Valves in the rooms; but people in not strong health have a practical prejudice against freshness in the air, and stop them up. Where such rooms exist, there bad habits tell tenfold on the people. In some of the Wynds of Edinburgh the poorest rooms were once the habitations of the nobles. Open stairs lead to high though divided rooms; and much as fever and other sickness rages in them, yet through these larger approaches and the higher apartments, the blessed air of the breezy Firth can sometimes wind its way. Low rooms, crowded, in a stagnant atmosphere allow no such hope of avoidance of these lower states of health, which with poor and scanty food drag the poor into consumption and all forms of scrofulous disease. How many Out-patients of the Infirmaries and Dispensaries in England at this moment require meat, and not medicine!

I repeat it—as houses are counted bad, ours are not bad. But land is dear here, and freeholds are scarce, and improvements are almost impossible. There are some who may read these pages, to whom life is fresh, and the wretchedness of the world unknown, who cannot credit the statement I made of the woman's bed: who would not believe that a young prostitute, possessor of one wretched room, fell down among us with the Cholera, upon her sole household goods, the sweepings of a tailor's shop, half covered by the ragged ticking that had once made the list-shreds serve as a bed. Poor girl! she lived through the disease, spent some months in a Penitentiary—and—returned to her ways.

It is obvious that the last instance of misery which has been named is due to faults of a moral rather than a physical kind. Of all such cases indeed it may be truly said that terrible as is their physical suffering, more terrible far their mental misery, and their incapacity for receiving comfort.

Supposing, however, that mental misery does depend upon moral as well as on physical causes, and supposing that sin does produce temporal wretchedness, shall we say that for either reason the awakening of the dreamers by the sudden shock of Pestilence, and their quick passage into the shadow of death, is less terrible? Must we for these reasons refuse to see how some of our fellow-men, by whose doors we daily pass, can live within them? Judge now.

Soon after 5 one morning, a woman awoke in the agony of cramps, with intense and sudden collapse. She was seen at 6. There was in her room no article of furniture, but one broken chair; no bed of any kind, no fire, no food; she lay on

the bare boards; a bundle of old sacking served for a pillow; she had no blanket, nor any covering but the ragged cotton clothes she had on. She rolled, screaming. One woman, scarcely sober, sat by; she sat, with a pipe in her mouth, looking on. To treat her in this state was hopeless. She was to be removed. There was a press of work at the Hospital, and a delay. When the carriers came, her saturated garments were stripped off, and in the finer linen and in the blankets of a wealthier woman she was borne away, and in the Hospital she died.

Her room was cleaned out: the woman that cleaned it had next night the Cholera. She and her husband were drunk in bed. The agony sobered *her*, but her husband went reeling about the room: in a room below were smokers and drinkers. Then a woman of the streets in her gaudiness came to see her. They would not hear reason, but drank more spirits. The victim of the Disease cried out to the end, that her soul was everlastingly lost; and she died.

The care of these things weighed heavily.

The City was in charge of a small unpaid Committee of the Board of Guardians, of whom the health of one, and the business of a second, forbad the attendance. The University was in its Vacation: the Cholera ceased: the University returned. The Cholera required a special Rate to defray its expenses. The bills seemed high, and in time were paid. The Epidemic is now a matter of history. Have we profited by its lessons?

In speaking of the condition of dwellings, the state of the houses and alleys have not been fully spoken of. They are greatly improved, and generally it has been said that there are not any that are *very bad*. In some, however, heaps of refuse accumulate after they have been removed, and this nothing but very efficient surveillance and a complete system of Draining and Water Supply will ever remedy. For further details concerning them, the reader is referred to the dark marks on the Map above described, and to the Sanitary Works before alluded to.

After what has been here stated, it remains to be said, that no where could be found instances of more simple self-devotion, and more genuine kindness of heart, than were to be seen in Oxford, and at this time: that as one whose duties have enabled him to know something of the lives of the poor, I will dare to say, that there live in this City persons who, in spite of meanness of occupation, and extreme penury of life, possess and show to an eminent degree, though in their humble sphere, those moral qualities, whose cultivation is one of the main purposes of existence for every one: that the gentle nobleness of their natures might excite the sympathy of all, and that it might be as a model, if not of cultivation of mind, yet of personal character and conduct, in those great struggles that are the common trial of all mankind.

Elevation.

§. 4. In the Registrar General's Report on Cholera in 1849, it was stated that "the elevation of the soil in London has a more constant relation with the mortality from Cholera than any other known element." It became therefore my duty to endeavour* to ascertain how far this was the case here also. From the examination of the Contour Lines, which may be noticed upon the Map, the following Calculations† have been deduced:

				In the three Epidemics.
These were in the highest, 10 feet in Below 49·64 above 39·64.	1832	4 Cases		36
	1849	13		
	1854	19		
In the succeeding, 10 feet in Below 39·64 above 29·64.	1832	20		61
	1849	30		
	1854	11		
In the next, 10 feet in Below 29·64 above 19·64.	1832	53		186
	1849	47		
	1854	86		
On the borders of the river the average surface of the water at Folly Bridge being (36·47) feet below the summit at Carfax.	1832	20		118
	1849	44		
	1854	54		

But these figures 118, 186, 61, 36, represent only the actual cases recorded on the Map in the three Epidemics, not the proportion of the fatality, and not the proportion of the cases to the population. These proportions must be now given.

The Contour Line 29.64 may be taken as dividing the City into an upper and a lower level, it being 16.47 feet above the average water level at Folly Bridge, and 20 below the summit at Carfax. If the cases which occurred in the three Epidemics collectively, including St. Clement's‡, be reckoned, it is found that 141 cases occurred in the upper level, and 362 in the lower: and estimating the populations in the upper level at 14,200, and those in the lower level at 12,300, it will be found also that on the average of the three Epidemics there occurred 33.09 cases in each 10,000 of the people in the upper level, and 98 per 10,000 in the lower: and estimating the deaths at 54.30 per cent., on the average of the three

* No Contour Lines of the City being published, I was fortunate in being able to obtain them from Mr. Hoggar, the Engineer, from his unpublished drawings: they are reproduced in my Map.

† This calculation excludes New Hincksey, and also St. Clement's: the case of the latter is wholly anomalous. There was in 1832 a great mortality in St. Clement's. Taking the whole of the Epidemics of 1849 and 1854, in St. Clement's there were in the five feet below the highest Contour line 9 cases: in the ten feet next the River line 17 cases.

‡ In St. Clement's, in the exceptional year 1832, half the cases were above, and half below the 29·64 Contour.

Epidemics, the deaths were at the rate of 17.97 per each 10,000 in the upper level, 53.26 per each 10,000 in the lower level.

Generally, therefore, the conclusions of the learned and accomplished Dr. Farr are fully corroborated by the case of Oxford. The mortality on our lower level was proportionally three times as great as that of our upper level.

Effect of Density of Population.

§. 5. The area of the University and City of Oxford is supposed to be about 361 acres ‖, exclusive of the streets. Of these the University occupies 82. The population, therefore, inhabiting the City portion during the time of the Cholera being about 25,824, there were on an average 92.8 persons to an acre; or if the City and University together be reckoned, the population would be at the rate of 73.3 to an acre. Some parts however are far less dense than others. Assuming the average of the residents in the University during the prevalence of Cholera at 600, as I have done, there were not more than 7.3 persons to an acre of the University. Of these persons not one had the Cholera. The poorest districts in Oxford are also as is usual the densest, as they are the lowest. These are St. Thomas's, St. Ebbe's, and St. Aldate's. Of these St. Ebbe's contains about 39 acres §, exclusive of streets, and 119 persons to an acre; St. Aldate's, 12 acres, and 157 persons to an acre; or both parishes together, 128 to an acre. St. Thomas's, that part at least called the Parish, may be estimated at about the same as St. Aldate's.

In Oxford, therefore, the parishes which, if we except perhaps certain limited house blocks, are the densest, were also the most grievously visited by Disease; but this cannot be attributed to the density alone, but to other causes also; these have been here and elsewhere alluded to. In London it was noticed that the densest parts of the population (246, 256, 290 persons to an acre) were not the most severely attacked. On the contrary, that the mortality was far higher in some of the more open, than in the more dense districts.

Effects of Imperfect Drainage and of Water Supply.

§. 6. In the early part of the first chapter it was pointed out how the lowest and poorest parts of the City are those which are also the least well drained: upon this subject there is no need of further repetition. Still it is but just to record the opinion, that it is not imperfect drainage alone which is the cause of ill health in undrained places, though unquestionably it is *a* fundamental cause. Where the drainage is bad the basements are damp and foul; in old towns the ground is, in some places, saturated with liquid ordure to an amount scarcely to be

‖ For this estimate I am indebted to Mr. Frederick Morrell.

§ Mr. Selby has calculated this amount.

estimated; and the wells are more or less impure; and good tenants will not occupy if they can go elsewhere. It is strange to see how one evil, in moral and physical causes alike, drags others in its train. Mr. Ormerod's Sanitary Map of Oxford points out in an admirable manner the way in which the Epidemic and Contagious Diseases are collected round special centres: and, as may be seen by the Map in this Memoir, these are also about the undrained parts.

But I fully agree with the general bearing of the remarks on the subject of Water Supply, which were published by Mr. Rowell, in the Oxford Journal, Sept. 2, 1854. These remarks I need not recapitulate, as in Oxford they are well known; but for readers out of Oxford it may be said, that they tend to prove that in districts where the water is impure, the Diseases that have just been named are the most rife: the notable instance of St. Clement's may be repeated. In 1832, there were, out of 174 Cases in all Oxford, in this parish alone 74 Cases of Cholera, and in 1849 only 3. During the former Epidemic the inhabitants had filthy water from a sewer-receiving stream; and in 1849 from the springs of Headington, conveyed thither soon after 1832. In 1854, out of 194 Cases, but 18 occurred in St. Clement's; a proportional increase which would tend to show, what indeed we have various other evidence of, that the Water Supply, though it may be one mode, is not the only mode of conveying the Cholera poison.

An instance occurred in the County Gaol which from its character may, I think, be accepted as almost an experimentum crucis, on one or two points in the investigation of the effect of Water Supply. The conclusions will be given in Chap. VI.: the facts only are here recorded. In the first place it is to be noted, we have here two Gaols, a City Gaol and a County Gaol. Neither in 1832, nor in 1849, were there any cases in the City Gaol: in the County Goal there were in 1832, 3 cases; in 1849, 14. The knowledge of these facts made me very anxious to note the circumstances of the Gaol in any subsequent Epidemic. This year (1854) the opportunity presented itself. The surgeon of the County Gaol, Mr. Wood, having reported that there were many cases of Choleraic Diarrhœa, and some of Cholera of special malignity in the Prison, the Writer was desired to inspect the Prison. The result of this inspection is quoted from the Report presented to the Magistrates.

"There have been 4 cases of Cholera, of which 3 have died. The first, aged sixty, had no premonitory symptoms at all. The second, aged forty-five, had had Diarrhœa for a few hours, and had been treated for it. The third had been ill for some days. The fourth had probably been ailing for some hours without stating it. The two first and the fourth cases were fatal. The first had been in the prison about one month: the second and third for several months: the fourth was still in the reception cell."....."Three of the officers resident in the prison, and one who resides out of it, have had Diarrhœa."....."I regret to add, that on paying a second visit to the Gaol yesterday, I found another sudden and virulent case of Cholera. It terminated fatally."

"Already out of 12 debtors, 5 have had Diarrhœa: out of 59 felons and misdemeanants, 19: out of 15 trial men, 7: of 9 women, 6: making a total of 37 out of 95 attacked by Diarrhœa in a fortnight, besides the cases of Cholera above described."

On this same day (September 29) it was ascertained that in the City Gaol there had been no cases of Diarrhœa of any consequence, and none of Cholera. The two Prisons are not far from each other. The County Prison is admirably managed—the Officers are attentive humane men—the Surgeon an accomplished Practitioner—What could be the cause?

At a short distance from the Gaol flows a branch of the river, through St. Thomas's, one of those described at p. 24. It passed through a Mill, the Castle Mill—is dammed up for the Mill-head above the Mill—and when flowing through the Mill, forms a brisk stream in the Mill-tail, carrying with it whatever impurities it obtained in the Mill-head. When the Mill is not at work, and the water is ponded up, the Mill-tail becomes, as all such spots do, a nearly stagnant pool. This year (1854) the river was unusually low, and at the date of my inspection of the Prison, this pool contained various garbage stationary on its surface and its bottom. Further, a drain from the prison flowed into the pool; within ten feet of the mouth of this running drain, the supply-pipe from the prison sucked up the contents of the pool for the prison use. From this source the kitchen coppers were supplied, and with this water the soup and the gruel, important articles in the weekly diet, were made.

No sooner was the attention of the Governor of the Prison drawn to this fact—barren though it might appear to be—than the pipes were cut off: and what followed? whereas before this there had occurred 20 cases of Choleraic Diarrhœa, and 5 cases of Cholera, of which 4 were fatal; after the following day (September 29) no more than 3 of Choleraic Diarrhœa, and 1 of Cholera, (none being fatal), were reported during the rest of the Epidemic.

Whatever opinions there may be concerning the effect of Water generally in the production of Cholera, we cannot reasonably doubt the immediate connection between the Water and the existence of the Disease, nor question the cause of its cessation in this particular instance. The precise way in which the Water acts in the production of the Disease will be considered hereafter.

The Water was deficient in quantity, and bad in quality, in many of the wells*, and especially in some of the affected yards; and the water supplied by the Waterworks was Water from the river whose condition has been described at page 24: in the Map are seen also the principal, but by no means all the points where the Water was fouled by the sewage of the Town, before it was distributed over it †.

* Inquiries have been made of 123 houses or alleys, in which Cholera occurred, concerning their Water Supply. Of these, in 68 instances no complaint was made of the Well Water: in 26 it was said to be insufficient: in 14 to be bad. In all instances (10) where the City Water Works were depended upon, it was said to be too bad to be used: in 3 the same report was made of Wells; and in these 13 cases the inhabitants went elsewhere for their supply.

† Happily New Water-works are now constructed; still below the Town, but from a large sheet of water, not from the River. March 1856.

CHAPTER IV.

Comparative Meteorological results during the Visitations of Cholera in Oxford in 1832, 1849, 1854, *from observations made at the Radcliffe Observatory.*

For the important Meteorological Observations which follow, I am indebted to the kindness of Mr. Johnson, the able and indefatigable Radcliffe Observer.

"In the following Tables I have collected together and presented in as concise a form as I have been able, the mean monthly results of such Meteorological observations as have been made at the Radcliffe Observatory during the Visitations of Cholera in 1832, 1849, 1854. In the latter year the system of observation having been somewhat extended, the details are fuller. To have attempted a statement of daily changes during the two earlier visitations, would have led us beyond the reasonable limits of a local Report, and would probably not have been attended with any adequate advantage. With regard to 1854, this has been done in the series of Diagrams at the end of the volume, drawn up by Dr. Acland, to shew the progress of the Disease, of which the meteorological data are derived from the same source as supplied the following results.

Nothing more, I believe, need be said in the way of preface. I shall therefore place the Tables at once before the reader, and then proceed to the explanation of them.

TABLE I.—*Barometer.*

	Normal Reading.	Probable Ann. Var.	Excess in 1832.	Excess in 1849.	Excess in 1854.
	in.	in.			
Jan.	29·721	± 0·107	+ 0·060	− 0·007	− 0·168
Feb.	·700	·113	+ ·187	+ ·346	+ ·315
Mar.	·690	·118	+ ·019	+ ·184	+ ·431
Apr.	·700	·110	+ ·097	− ·232	+ ·234
May	·733	·085	+ ·002	− ·019	− ·126
June	·725	·059	− ·069	+ ·097	− ·046
July	·721	·047	+ ·160	+ ·009	+ ·028
Aug.	·730	·059	− ·079	+ ·047	+ ·110
Sept.	·718	·084	+ ·195	− ·002	+ ·242
Oct.	·684	·104	+ ·168	− ·001	− ·022
Nov.	·677	·111	− ·027	+ ·010	− ·036
Dec.	·707	·107	+ ·056	+ ·044	+ ·022
Year	29·708	± 0·028	+ 0·075	+ ·040	+ ·080

TABLE II.—*Thermometers.*

	Dry Bulb.					Wet Bulb.				
	Normal Reading.	Probable Ann. Var.	Excess in 1832.	Excess in 1849.	Excess in 1854.	Normal Reading.	Probable Ann. Var.	Excess in 1832.	Excess in 1849.	Excess in 1854.
	°	°								
Jan.	37·7	±2·61	− 0·7	+ 1·8	+ 1·6	36·5	±3·44	..	..	+ 1·6
Feb.	38·6	2·38	− 1·5	+ 3·4	+ 1·4	36·9	2·84	..	..	+ 0·6
Mar.	41·4	2·07	− 0·1	+ 1·2	+ 2·3	38·7	2·09	..	..	+ 2·1
Apr.	46·0	1·79	+ 0·5	− 3·1	+ 2·9	42·6	1·69	..	..	+ 1·7
May	52·4	1·68	− 0·1	+ 1·5	− 1·8	49·0	1·68	..	..	− 1·4
June	58·6	1·56	+ 0·6	− 1·0	− 3·0	55·2	1·68	..	..	− 2·4
July	61·4	1·43	+ 0·1	− 0·9	− 0·4	57·7	1·38	..	..	− 0·7
Aug.	59·7	1·28	+ 0·8	+ 0·9	+ 0·3	55·8	0·94	..	+ 0·6	+ 0·2
Sept.	55·1	1·33	+ 1·0	+ 1·0	+ 2·9	51·6	0·89	..	+ 1·5	+ 2·1
Oct.	49·3	1·65	+ 1·9	0·0	+ 0·4	46·8	1·49	..	0·0	0·0
Nov.	43·5	2·14	0·0	+ 0·2	− 2·2	41·9	2·54	..	+ 0·3	− 2·6
Dec.	39·3	2·50	+ 2·3	− 0·5	+ 2·7	38·0	3·36	..	+ 0·6	+ 1·6
Year	48·6	±0·60	+ 0·4	+ 0·4	+ 0·6	45·9	±0·66	..	..	+ 0·2

TABLE III.—*Hygrometrical Deductions.*

	Dew Point.				Pressure of Vapour.			
	Normal Value.	Excess in 1832.	Excess in 1849.	Excess in 1854.	Normal Value.	Excess in 1832.	Excess in 1849.	Excess in 1854.
	°	°	°	°	in.	in.	in.	in.
Jan.	34·7	..	..	+ 1·8	0·220	..	..	+ ·021
Feb.	34·5	..	..	− 0·2	·217	..	..	− ·005
Mar.	35·4	..	..	+ 2·0	·226	..	..	+ ·020
Apr.	38·9	..	..	+ 0·1	·254	..	..	+ ·011
May	45·6	..	..	− 0·7	·322	..	..	− ·011
June	52·8	..	..	− 1·8	·411	..	.	− ·027
July	55·1	..	..	− 0·6	·445	..	..	− ·004
Aug.	53·1	..	+ 0·4	+ 0·7	·415	..	+ ·006	+ ·002
Sept.	49·1	..	+ 1·9	+ 1·4	·363	..	+ ·023	+ ·019
Oct.	44·2	..	0·0	− 0·4	·306	..	·000	+ ·003
Nov.	40·0	..	+ 0·2	− 3·2	·264	..	+ ·002	− ·028
Dec.	36·2	..	+ 2·1	+ 0·7	·232	..	+ ·017	+ ·008

	Degree of Humidity. Saturation=1·0.				Weight of a cubic foot of Air.			
	Normal Value.	Excess in 1832.	Excess in 1849.	Excess in 1854.	Normal Value.	Excess in 1832.	Excess in 1849.	Excess in 1854.
					grs.	grs.	grs.	grs.
Jan.	0·902	..	..	+ ·005	550	..	..	− 5
Feb.	·864	..	..	− ·045	548	..	..	+ 5
Mar.	·815	..	..	− ·010	545	..	..	+ 5
Apr.	·780	..	..	− ·068	540	..	..	+ 1
May	·782	..	..	+ ·038	532	..	..	+ 1
June	·824	..	..	+ ·037	526	..	..	+ 3
July	·811	..	..	− ·005	523	..	..	+ 1
Aug.	·796	..	− ·009	− ·004	525	..	0	+ 1
Sept.	·818	..	− ·026	− ·039	530	..	− 1	+ 1
Oct.	·839	..	·000	− ·020	536	..	0	− 1
Nov.	·896	..	− ·010	− ·042	542	..	0	+ 2
Dec.	·899	..	+ ·085	− ·059	548	..	+ 1	− 3

TABLE IV.—*Mean daily range of Thermometer.*

	Normal Value.	Probable Variation.	Excess in 1832.	Excess in 1849.	Excess in 1854.
	°	°			
Jan.	9·7	±1·01	− 0·8	..	− 0·3
Feb.	11·8	1·57	− 1·7	..	+ 1·4
Mar.	15·3	1·97	− 1·6	..	+ 0·9
Apr.	18·1	1·87	− 1·7	..	+ 2·6
May	18·2	1·53	− 1·3	..	+ 0·7
June	17·0	1·31	− 0·5	..	− 1·0
July	16·7	1·37	+ 1·1	..	+ 1·5
Aug.	17·4	1·53	− 0·1	..	+ 1·0
Sept.	16·7	1·45	+ 2·4	..	+ 4·6
Oct.	14·0	1·07	− 2·2	..	+ 1·0
Nov.	11·1	0·65	− 1·0	..	+ 0·1
Dec.	9·6	0·59	− 0·2	..	+ 1·4
Year.	14·6	±0·40	− 0·6	..	+ 1·2

TABLE V.—*Quantity of Rain and other Fall.*

	Normal Value.	Probable Variation.	Excess in 1832.	Excess in 1849.	Excess in 1854.
Jan.	1·99	±·783	− 0·39	− 0·31	+ 0·16
Feb.	1·83	·695	− 1·43	− 0·95	− 0·94
Mar.	1·81	·672	+ 0·28	− 0·18	− 1·40
April	1·94	·725	+ 0·56	+ 1·52	− 1·16
May	2·17	·809	+ 0·72	+ 1·41	+ 1·07
June	2·34	·935	+ 0·63	− 1·19	− 0·53
July	2·51	·919	− 0·96	− 0·20	− 1·04
Aug.	2·63	·944	+ 1·90	− 1·48	− 0·92
Sept.	2·67	·964	− 1·64	+ 0·79	− 2·23
Oct.	2·63	·975	+ 0·71	− 0·99	− 0·36
Nov.	2·47	·953	+ 0·61	− 0·99	− 1·19
Dec.	2·23	·884	− 0·24	+ 0·43	− 1·03
Year.	27·22	±3·09	+ 0·75	−2·14	− 9·57

TABLE VI.—*Direction of the Wind.*

	Normal Direction.	Direction in 1832.	Northerly excess in 1832.	Direction in 1849.	Northerly excess in 1849.	Direction in 1854.	Northerly excess in 1854.
	°	°	°	°	°	°	°
Jan.	S 50 W	S 26 W	− 24	S 44 W	− 6	S 31 W	− 19
Feb.	S 62 W	S 60 W	− 2	S 48 W	14	N 52 W	+ 66
Mar.	S 79 W	S 75 W	− 4	S 89 W	+ 10	S 88 W	+ 9
April	N 18 W	S 47 W	−115	S 33 W	−129	N 9 E	+ 27
May	N 21 W	N 8 W	+ 13	N 44 W	− 23	N 82 W	− 61
June	S 64 W	N 80 W	+ 36	N 9 W	+107	N 71 W	+ 45
July	S 68 W	N 39 W	+ 73	S 62 W	− 6	S 83 W	+ 15
Aug.	S 67 W	S 45 W	− 22	S 60 W	− 7	N 75 W	+ 38
Sept.	S 61 W	N 86 W	+ 33	S 74 E	−135	S 65 W	+ 4
Oct.	S 59 W	S 35 W	− 24	S 27 W	− 32	N 85 W	+ 36
Nov.	S 42 W	S 54 W	− 96	S 23 W	− 19	N 58 W	+ 80
Dec.	S 47 W	S 55 W	+ 8	N 11 W	+122	N 89 W	+ 44
Year.	S 61 W	S 61 W	0	S 56 W	− 5	N 80 W	+ 39

TABLE VII.—*Proportion of Northerly to Southerly, and of Easterly to Westerly Winds, Northerly and Easterly Winds being assumed=1.*

	Normal Ratio.	Ratio in 1832.	Proport. excess in 1832.	Ratio in 1849.	Proport. excess in 1849.	Ratio in 1854.	Proport. excess in 1854.
North to South.							
Jan.	1·42	2·57	1·81	2·50	1·76	4·00	2·82
Feb.	1·60	1·27	0·79	7·33	4·58	0·19	0·12
Mar.	1·04	1·40	1·35	1·08	1·04	1·13	1·09
April	0·83	2·25	2·71	1·27	1·53	0·31	0·37
May	0·81	0·59	0·73	0·80	0·99	1·50	1·86
June	1·55	0·92	0·59	0·56	0·36	0·74	0·48
July	1·74	0·41	0·24	1·78	1·02	1·13	0·65
Aug.	1·75	3·67	2·10	2·67	1·53	0·65	0·37
Sept.	1·26	1·00	0·79	1·18	0·94	1·47	1·17
Oct.	1·75	3·67	2·10	1·40	0·80	0·96	0·55
Nov.	1·95	1·50	0·77	3·00	1·54	0·38	0·19
Dec	1·77	2·83	1·60	0·67	0·38	1·00	0·56
Year.	1·40	1·34	0·96	1·39	0·99	0·81	0·58
East to West.							
Jan.	1·49	1·60	1·07	3·00	2·01	1·70	1·11
Feb.	2·27	1·15	0·50	30·00	13·15	3·90	1·71
Mar.	1·56	3·00	1·93	1·67	1·07	2·55	1·63
April	1·02	2·43	2·38	1·15	1·13	0·83	0·81
May	1·06	1·00	0·94	1·27	1·20	36·00	33·96
June	2·34	2·33	1·00	1·00	0·43	6·20	2·65
July	3·12	1·88	0·60	2·86	0·92	3·10	0·99
Aug.	3·05	5·00	1·64	5·50	1·80	14·67	4·81
Sept.	1·68	2·14	1·27	0·40	0·24	3·00	1·79
Oct.	2·42	3·00	1·24	1·30	0·54	6·00	2·48
Nov.	1·93	0·56	0·29	1·67	0·87	16·00	8·28
Dec.	1·92	4·00	2·08	1·22	0·64	inf.	inf.
Year.	1·86	1·66	0·89	1·71	0·92	4·37	2·35

TABLE VIII.

	Relative Force of Wind.		Amount of Cloud.		Schönbein's Ozonometer.	
	Normal Value.	Excess in 1854.	Normal Value.	Excess in 1854.	10 A.M.	10 P.M.
Jan.	2·0	− 0·5	7·5	+ 0·4	..	..
Feb.	2·1	− 0·6	6·9	+ 0·9	2·7	2·0
Mar.	1·7	− 0·4	6·8	− 0·7	3·1	1·9
April	2·0	− 0·5	6·9	− 2·4	3·8	2·3
May	1·7	− 0·6	6·9	0·0	4·7	2·3
June	1·9	− 0·2	7·2	+ 0·8	5·0	3·4
July	1·8	− 0·6	7·5	+ 0·4	3·2	2·0
Aug.	1·8	− 0·4	6·9	− 0·5	2·6	1·5
Sept.	1·7	− 0·2	6·0	− 1·7	2·9	1·9
Oct.	1·9	− 0·3	7·3	− 0·4	2·6	1·7
Nov.	1·8	− 0·2	7·1	+ 0·6	3·0	2·8
Dec.	1·7	+ 0·5	7·7	− 1·0	3·6	2·4
Year.	1·8	− 0·3	7·1	− 0·3	3·4	2·0

Explanation of the Meteorological Tables.

TABLE I.—The second column contains the most probable mean monthly reading of the Barometer deduced from 25 years' observations, from 1828 to 1852 inclusive.

The column entitled "Probable Annual Variation" shews the amount of variation to which the values in the preceding column are liable, according to the theory of probabilities. The numbers here given represent the limits within which it is an even chance that the mean monthly indications in any year will agree with the Normal values. They serve therefore as standards to mark the meteorological character of any given month; excesses falling within these limits shewing that the condition was not abnormal, while greater excesses shew that it was.

In the three following columns are given the excesses during every month of the years in which Cholera appeared. In these columns the sign + shews that the atmospheric pressure of the year was greater than the normal pressure, and the sign −, the contrary. Therefore by adding the quantities with the + sign to, and subtracting those with the − sign from, the normal values, we obtain the reading of the barometer for any required month.

Thus a comparison of these numbers with the *probable variation* will shew whether there was any thing extraordinary in the character of the month. For example, we see in the year 1832, that the excess in January was less than the probable variation, therefore that month was not abnormal in the condition of pressure; whereas February was. The same was the case in 1849; while in 1854 both months were abnormal.

Furthermore, knowing the probable variation of any period and its observed excess, we are in a condition to estimate, by the law of probabilities, the degree of abnormality. Thus, such an excess as occurred in February 1832, will probably occur once in every four years; whereas so great a difference as occurred in February 1849, is not likely to occur more than once every 25 years, and the excess in March 1854 was such as is not likely to happen more than once in 70 years.

From these columns of excesses it will be seen that in all the years of Cholera the mean pressure of the atmosphere was greater than the normal pressure.

The excess in 1832 is likely to recur once in 14 years.
.. .. 1849 .. .. once in 4 years.
.. .. 1854 .. .. once in 18 years.

It must be understood that we are not asserting that the standard is unerring: but I believe, under the circumstances, it is as convenient and as sure a test as any we can adopt, and has the advantage of conveying a more definite idea of climatic anomalies than a mere statement of comparative agreement with an average; which is a factitious quantity, dependent entirely for its value, as a

standard, on the elements from which it is composed. For example, take these two series of numbers.

29·75	29·55
29·35	29·45
29·17	29·43
29·99	29·50
29·04	29·40
Mean 29·46	Mean 29·46

The means of both series agree. Now take the differences between each individual result, and the mean, disregarding signs, and we have—

0·35	0·09
11	01
29	03
53	04
42	06
Mean 0·340	Mean 0·046

Here then, obviously, a deviation of 0·10 would be a small quantity relatively to the first series, and a large one relatively to the second. But we could not judge of this without knowing the average differences which obtain between the numbers composing the averages themselves.

I have perhaps dwelt too long on this subject, but it appears to me an important one in Comparative Meteorology; and as I have adopted the same system in all the following Tables, wherever I had materials for a tolerably accurate determination, what I have here said will be applicable to them also.

Table II. contains the comparisons of the mean monthly temperatures of the three years with the normal values. The arrangement is the same as that of Table I.

The year 1832 is distinguished by extreme regularity of temperature. Only one month, October, was abnormal, and that very slightly. In 1848 the months of February and April were abnormal, the former in excess, the latter in defect, as 3 to 1 and 4 to 1 respectively; that is to say, such differences are likely to occur every third and fourth year.

The year 1854 presents greater irregularities. Six out of the twelve months were slightly abnormal; the low temperature of June, and the high temperature of September are chiefly noticeable; the former in the proportion of 5 to 1, the latter of 6 to 1.

The mean temperatures of all three years were normal.

Table III. contains the Hygrometric results deduced from the preceding values of the Dry and Wet Bulb Thermometers, by Glaisher's Tables.

The observations have not extended over a sufficient number of years to enable us to establish satisfactorily the probable variation of these elements. However, the deficiency of humidity, and the excess in the weight of air, in the year 1854, are noticeable.

Table IV. contains the comparison of the normal daily range of temperature in each month, with the daily range in 1832 and 1854; no observations of the kind having been made in 1849. In this Table we may remark great comparative steadiness of temperature in 1832, and the contrary in 1854. In 1832, in three months only was the range *greater* than the normal range; whereas in 1854 there were only three when it was *less*. The greatest excess is in September 1854, which was abnormal in the proportion 35 to 1. The same month in 1832 was also abnormal, but only in the proportion of $4\frac{1}{2}$ to 1. The range of the year was in both cases abnormal; in 1832, the proportion being as $3\frac{1}{4}$ to 1; in 1854 as 25 to 1.

Table V. gives a comparative view of the fall of rain during the periods under consideration. It is in this particular that we differ most from the values given by Mr. Glaisher, in his elaborate Report on the Meteorology of the Metropolis. In all that we have hitherto examined, our results are very similar to those at which he has arrived.

In the neighbourhood of London there was a deficiency of 7 inches in 1832; here there was an excess of $\frac{3}{4}$ of an inch. In 1849 the deficiency near London was $\frac{6}{10}$ths of an inch; here it was 2·14 inches. In 1854 the annual deficiency about London was 5.93 inches; here it was 9.57 inches; a deviation, from the normal value, not likely to occur more than once in 27 years.

In Table VI. is given the average monthly direction of the wind, found and recorded according to a method known as Lambert's method. The normal direction is the result of 25 years observations.

The columns entitled Northerly excess, show the deviation, greater or less, of the monthly from the normal mean. Reckoning in the direction N, E, S, W; when the monthly deviation is towards N, according to this progression, the + sign is prefixed; if farther from N, the — sign is used. Thus in July 1832, the monthly direction is N 39° W, that is, 51° from W towards N, whereas the normal direction is S 68 W, that is, 22° from W toward S, therefore the monthly deviation is $51° + 22° = 73°$ more N than the normal direction; consequently the sign — is prefixed.

Again, in Nov. 1832 the normal direction is S 42 W, that is, 42° from S towards W; the monthly direction is S 54 E, that is, 54° from S towards E; therefore the deviation of the month is $42+54=96°$; but as in the order of progression W approaches N nearer than E, the deviation is distinguished by the — sign.

During the severest period of the Visitation in 1832, it will be perceived that the

wind had a decided bias towards the NW. The same also was perceptible in a still greater degree in 1854; but not so in 1849.

The mean annual direction in 1832 and 1849 agrees nearly with the normal direction. In 1854 however the annual deviation is as much as 39° towards the N.

Table VII. gives the relative amount of Southerly to Northerly, and of Westerly to Easterly winds, assuming the amount of Northerly and Easterly winds=1.

The construction of this Table is as follows. The days on which the wind blew NW, N, NE, are reckoned N;—NE, E, SE, are reckoned E;—SE, S, SW, are reckoned S; and SW, W, NW, are reckoned W.

The numbers given in the columns of ratios, in the first half of the Table, are the number of days of S divided by the number of days of N; and in the second half, the number of days of W divided by E. The normal ratio was deduced from 25 years' observation.

The columns entitled "Proportionate excess" give the ratios which the monthly values bear to the normal values. For example, in January 1832 there was 2.57 times more S wind than N; the normal excess is only 1.42 times; divide 2.57 by 1.42, and we have 1.81 nearly. Therefore there was 1.81 times more S wind than usual in that month. When the "proportionate excess" is less than 1, it shews of course that there was less S or W wind than usual.

This Table shews that in each of the three years there was a deficiency of S wind; and in 1832 and 1849 a deficiency also of W; but in 1854 there was the large excess of 4.37 in favour of W. In December of that year there was no E wind, therefore of course the ratio is infinite.

Table VIII. contains the relative force of wind, the amount of cloud, and the indications of Schönbein's Ozonometer taken twice a day, at 10 in the morning and 10 at night.

The two former elements are mere naked eye estimates, and claim only a certain amount of *relative* accuracy.

For the wind, our notation is from 0 to 6; 0 representing a calm, and 6 the heaviest storm. The normal values are the mean of 5 years' observation. Comparing the numbers in the column of excess in 1854, it will be perceived that they are all effected with the — sign, shewing that there was a deficiency of wind in that year.

In the plate shewing the progress of the disease in 1854, the value of one unit of our notation has been assumed equal to 60 miles of the Greenwich Anemometer, this being the result of several comparisons with the indications of that instrument.

Our Cloud notation is from 0—10, the former figure representing a clear, and the latter an overcast sky. Here again the normal value is the mean of five years

observations. The column of excess, generally, exhibits nearly an equal division of + and — signs, but it will be perceived that the three months of Cholera were less cloudy than usual.

Observations with Schönbein's Ozonometer were commenced during the last days of January 1854. Some few early experiments have been rejected, and our Table begins with February. The observation, as is known, consists in observing the action of the atmosphere on a piece of prepared paper; whether after exposure to the air, the paper on being dipped into clean water exhibits any tint of purple, such as is shewn on a scale with which the observer is provided. The deepest tint is marked 10, and 0 indicates that no perceptible effect has taken place. Our practice has been to expose a slip of paper at 10 in the morning and to examine it at 10 at night, when another slip is exposed, which is examined at 10 the next morning. It will be perceived that in every case the paper exposed during the night was most affected. I draw attention to this circumstance without knowing whether it is usual, for I have no series of experiments at hand, made in other places. Care was taken, according to the precept given with the papers, to expose them as much as possible to the air, and at the same time to protect them from sunlight and rain.

The numbers in the Table are monthly means, and consequently made up of all grades of tints. On account of the novelty of the experiment, it may be interesting to mention the days on which the deepest tints (9 and 10 of the scale) occurred.

These were—

February 1. 6. 17. 24.
March 4*. 5. 8*.
April 12. 17. 22[b].
May 3. 7. 16. 21. 28. 29.
June 2. 10.
July .. .. ..
August .. ..
September 20[b].
October 7. 8. 17*. 22.
November 18[b]. 26.
December 3*. 14. 22. 25. 27.

On the days marked with a *, the indication occurred between 10 A.M. and 10 P.M.; on those marked with [b], both observations were affected; in the remaining cases the indication occurred at 10 A.M., after the paper had been exposed all night.

They occurred 6 times, when the wind was N.
6 .. .. NE.
2 .. .. E.
1 .. .. SE.
0 .. .. S.
7 .. .. SW.
9 .. .. W.
2 .. .. NW.

It only remains to examine the characteristics of the three years under consideration, in relation to occasional phænomena, such as snow, hail, thunder and lightning, and Aurora Borealis.

In 25 years, from 1828—52, I find recorded 253 days of snow, which gives an average of 10 days a year, nearly. The greatest number occurs in 1838, when it amounted to 24; the least in 1834, when it fell only on one day.

In 1832 the number of days was	.. ..	3.
1849	..	9.
1854	..	8.

The number of days of Hail during the same 25 years was 94, giving an average of rather less than 4 days a year. The highest extreme was 8 in 1851.

In 1832 the number of days was	.. ..	0.
1849	..	7.
1854	..	12.

The number of Thunder-storms during the same period was 88; giving an average of 3.5 a year. There is none recorded in 1829; 7 occurred in 1852. These are the extremes.

In 1832 the number was ..	.. .. ..	1.
1849	..	4.
1854	..	8.

The number of days, during the same period, when Thunder was heard unaccompanied by Lightning, was 90, giving an average of 3.5 a year. No occurrence of the kind took place in 1829, 1833, 1838, or 1840. In 1835 and 1846, it happened 8 times.

In 1832 it happened	.. .. ..	2 times.
1849	8	..
1854	4	..

The appearances of Lightning without Thunder do not seem to have been noted before 1840. From that time to 1852 the phænomenon has occurred 47 times; again giving an average of 3.5 a year. It was not observed in 1840, 1842, or 1848; in 1852 it was observed 13 times.

In 1849 the number of occurrences was	..	6.
1854	..	8.

The number of recorded appearances of Aurora Borealis from 1828—1852 is 28. The greatest number having been seen in 1852, when it amounted to 6.

In 1832 the number was ..	.. .. ..	0.
1849	..	2.
1854	..	9.

The subjoined Table presents at one view the principal results of the preceding inquiry.

TABLE IX.

	Atmosph. Pressure.	Mean Temperat.	Range of Temperat.	Amount of Rain.	Direction of Wind.	Force of Wind.	Days of Hail.	Thunder & Lightning.	Aurora Borealis.
1832.	Abn. +	Norm. +	Abn. —	Norm. +	Norm.	?	Abn. —	Abn. —	Abn. —
1849.	Abn. +	Norm. +	?	Norm. —	Norm.	?	Abn. +	Norm.	Norm.
1854.	Abn. +	Norm. +	Abn. +	Abn. —	Abn.	Abn. —	Abn. +	Abn. +	Abn. +

On comparing the details of this Table the reader will not fail to remark how few similar features the three years present. In fact, the abnormal excess of atmospheric pressure and the normal excess of mean temperature, are the only conditions common to them all. The years 1832 and 1854 are both very abnormal, but in every other respect except those just mentioned, in *opposite directions*. Hence we might be led to infer, that meteorological excesses in either direction are equally favourable to the developement of the disease. But then how are we to account for its appearance in 1849, which viewed altogether, is by no means an abnormal year?

There is however one point which the Table brings out very strongly, that is, the extraordinary character of 1854. Except in the solitary condition of mean temperature, every thing is abnormal. Excessive in atmospheric pressure, and daily variations of temperature, deficient in rain and wind, abnormal in the direction of wind, excessive in the display of electrical phænomena,—as if to complete a meteorological paradox, this same year, remarkable for the abundance of its harvest, was not less remarkable for pestilence and its consequent mortality."

The relations between the Atmosphere and the Disease.

It remains for me only to connect the Meteorological facts, philosophically set forth by Mr. Johnson, with what I have been able to collect of the relation of these facts to the progress of the Disease. That there is a connection between the state of the Atmosphere, or of the imponderable agents of the globe, and the existence of the Epidemic, is scarcely doubted by those who have carefully attended to its history; and the Observations of Mr. Johnson, and those of Mr. Glaisher, confirm this view. I shall hereafter express my own hypothesis as to the part which it plays. What is the precise nature of the connection these skilful Observers do not pretend as yet to decide. Mr. Glaisher indeed states that he can *by eye* detect differences in Mist, which he connects with various forms of disease. And various in-

stances are recorded of the real or supposed existence of a "Cholera smell" in the air before its approach. Admitting these subtle discriminations of the human sense, we must confess that the matter on which they are exercised has not been determined by science. Both Mr. Johnson's Observations here in Oxford, and Mr. Glaisher's labours in the Metropolis, show the year 1854 to be abnormal. As Mr. Johnson has stated, 1832 and 1854 were both abnormal, but in different directions, as though a merely abnormal meteorological condition were sufficient to cause the pestilence. It may be confidently expected that the rapidly advancing science of Meteorology will, if another Epidemic be appointed to visit us, make clear which of the abnormal conditions are the essentials; for the accurate observations of *several* Cholera localities during another Epidemic will tend of course to prove which of the abnormities are universally present.

The reader, on looking at the Diagram placed at the end of the volume, will notice that in Oxford there were three distinct periods of increase in the number of Cholera cases. The first from September 5 to September 13; the second from September 13 to September 28; and the third from September 28 to October 8. The Diarrhœa recorded followed nearly the same rule, as did also the Choleraic Diarrhœa. It would needlessly detain the reader if I were to enumerate in words the numbers which he can see more graphically presented to him in the Diagram; but his attention should be directed to some coincident phænomena expressed by the sheet before him. 1st, it is truly interesting to see the way in which the general curves of the Diarrhœa, Choleraic Diarrhœa, and Cholera, followed each other; suggesting, as far as one locality may suggest a theory, that there is some common agent concerned more or less in producing all three forms of disease. He should especially notice, for instance, how on September 18th, when there was a great rise in the Diarrhœa cases, viz. from 178 new cases to 226, this rise was coincident with the highest number of Cholera Cases in the second group, and with all but the highest of the Choleraic Diarrhœa; though this is not *always* the case. On the 22nd the Diarrhœa Cases fell when the Cholera rose, *but the Choleraic Diarrhœa* was that day at its maximum; it seems as though the cause, whatever it be, which produced Diarrhœa and Choleraic Diarrhœa, acted on that day rather with intensity on individuals, than extensively on the population. Again, the Diarrhœa fell from 118 new Cases, reported on the 27th, to 68 on the 28th; on this last day there was *no* new Case of Cholera. The Diarrhœa rose again to 115 new Cases on the 2nd of October, and the Cholera cases rose again to 9 new Cases.

Were any Meteorological conditions noticed at the Observatory, as always accompanying these periods of fluctuation in the Disease?

Ozone.*

Now, first of all, between the 27th of August and the 16th of October, which may be called the limits of the mass of the Disease, excluding a few outlying cases at the beginning and the end, there were, as has been just said, three periods of increase, and of course two intervening periods of diminution. Exactly the same thing happened with the Ozone and at the same period; with this difference only, that whereas the greatest amount indicated by the Ozonometer in the first period coincided with the worst Cholera day, in the two subsequent periods the maximum of Ozone followed the maximum of Cholera. Of these facts, assuming a connection between them, there may be two explanations, either that the rise of the Ozone caused the rise of the Cholera (the first group), or that the rise of the Ozone preceded or caused the subsequent period of Cholera disease. This last view is scarcely applicable to the second and third group, for, as I have said, the maximum of Ozone appeared while the Cholera was on the decrease. It need hardly be said that one such coincidence is insufficient to establish a connection, still less to shew its nature, whereas, on the other hand, it is quite impossible that the observer should not be struck with the fact of the coincidence of these four masses of Diarrhœa, Choleraic Diarrhœa, Cholera, and Ozone. It may as well be added here once for all, that in the collection of the statistics of these cases of Disease, the Medical practitioners were wholly unaware of the nature of each other's returns, and that therefore, although the returns themselves may not represent with absolute accuracy the precise number of Cases that occurred, it is most likely that any errors, which may exist, mutually counterbalance each other, and that the curves really represent the actual course of the Disease.

Thermometer.

On the 8th of September, the centre of the first period of increase, the Temperature fell, and there was far less difference between the maximum and minimum of the Thermometer than on any previous day for a week. From that day to the 13th the maximum rose again, the Cholera diminishing; but on the 18th, the centre of the next period of increase, it had again fallen. On that day, however, there was greater variation between the extremes of Temperature than on the two preceding days. The maximum of the Thermometer was on the increase on the day of cessation of the second Cholera period, but then the minimum the day before had been lower than on any day for three months. At the maximum of the third period the Thermometer was falling, and at the termination of this epoch it was again rising. So that we cannot predicate any one Thermometric condition as common to these three periods.

* The Contour lines on the Map will show that the Observatory, where Ozone observations were made, is one of the highest parts of Oxford.

Rain, Cloud, and Moisture.

The weather was unusually fine, dry, and clear. In the first Cholera period and the third the sky was comparatively free from cloud, on the day preceding and following the lull in the Disease. After the second period there was no cloud, but at the next great lull, as in the centre of the second or middle period of increase, the sky was all but wholly overcast. Upon looking at the line formed by the degrees of moisture in the air, it will be seen that on the days preceding the two first Cholera periods the air had been becoming more dry, and, preceding the last period, more fully saturated. No rain fell on the maximum days of the two first Cholera periods, or on the day of material decline of the Disease, September 27. But a little fell on the maximum day of the third period, and on the minimum day which followed it.

Wind.

Contrary to the opinion which has been gaining ground on apparently sufficient data, we do not find that a general stagnation in the air is a necessary accompaniment of the Epidemic. For although on the central day of the last period of increase there was scarcely any movement of the atmosphere around Oxford, it was blowing fresh during the central period, (so fresh as to blow down the tents in the Field of Observation,) as it did also during the decline of the Disease. And the direction was by no means uniform. It was mainly northerly previous to the first period, south-west previous to the second, and northerly again previous to the third.

Barometer.

During the first and third Cholera periods the Barometer was steadily falling, and continued to fall for some days afterwards. During the main central period it was steadily rising, and continued upon the whole to rise, excepting on one day of storm, September 24, until the day before that of the great lull in the Disease, September 28, when it was falling, as it continued to fall chiefly during the height of the last period. It rose again and fell an inch, in the fortnight during which the Pestilence died out.

In concluding this comparison between the course of the Epidemic and the condition of the Atmosphere, we may in few words bring our statements into relation with those of the Scientific Committee of the General Board of Health.

The reading of the Barometer here, as in London, is shewn by Mr. Johnson to have been unusually high, as was the mean temperature, it being remarked by Mr. Johnson that these two conditions were common to our three Cholera Epidemics, and the only conditions, he states, that *were* so. With us, as in London, the *range* of Temperature was, this year, during a part, but not during the whole, of the Cholera period, less than usual. Of fog, mist, and haze, we here observed, I believe, less

than is frequent with us. If we had during the Cholera period two periods of calm, we had one period, and that the centre of the Epidemic, of very considerable movement. In fact, the horizontal movement of the one or two periods before and after the centre of the Epidemic exceeded that of any day in the previous ten weeks. And lastly, especial attention must be called to the fact, that with us there was a greater amount of Ozone shown on some days than on any previous day for eight weeks, and that the total value of Mr. Johnson's Ozone notation in the central week of the Cholera, September 17 to 24, amounted to nearly 37, and in no other week, for ten weeks, to 25.

It is impossible to close this subject without the expression of a hope and firm expectation, that in some future Epidemic such observations may be made in most of the affected towns, as may lead to the realization of Mr. Glaisher's anticipation, quoted in the Scientific Report, that we may be in a condition "to elaborate a clear insight into the Meteorological causes" of disease. This consummation is to be attained in no way but by the hearty cooperation of many persons for a common good, such as that which has now most kindly been given to me by Mr. Johnson.

CHAPTER V.

Treatment of the Disease in Oxford.

From the experience which I had had in the Epidemic of 1849, and also from the knowledge that the Metropolitan Board of Health had undertaken, through a Medical Council of able persons carefully selected, to make a searching inquiry into the statistics of the Disease as it showed itself in London; and also from the fact already adverted to, that the Epidemic was at its height before any adequate arrangements were made, I decided, at the time of my appointment, that no practical advantage, commensurate with the labour that would be caused, could be gained by an endeavour to obtain from the Practitioners of Oxford a detailed history of each individual case. But I thought it due to those Gentlemen, and also to the District to which they rendered their services, to request them at the time to favour me with a summary of their opinions and experience during the course of the Disease.

The two following Questions were submitted to all who were engaged by the Oxford Board of Health.

I. What treatment do you believe to have been the best for ordinary Diarrhœa? Was there any treatment that seemed to you to fail on this occasion, which you had believed to be efficacious?

In answer to this question, ten Gentlemen have kindly detailed their plan of treatment. Of these all but one employed Opium with success. It was used in combination with Chalk by five; with Sulphuric Acid by three; with Astringents, such as Kino and Catechu, by two; with Calomel by two; and with Grey Powder by two.

Dilute Sulphuric Acid in Infusion of Roses, with or without Sulphuric Æther, was employed by three: the dose of the Sulphuric Acid being in some cases one drachm every hour, or two hours; in others less.

When the above remedies had failed, Opium in a dose of two grains, Acetate of Lead with Opium, Sulphate of Iron, and Sulphate of Copper, have respectively been found successful.

In one poor district Chalk Mixture with Opium is especially remarked to have been inefficacious: and, in this district, both the Medical men employed notice the success of the treatment by Sulphuric Acid.

Rest in bed, restriction to pure water, iced water, or weak brandy and water, are especially noticed as signally beneficial.

II. What treatment do you believe to have been best for Choleraic Diarrhœa?

In the treatment of the severe or Choleraic Diarrhœa, I find that of nine who have favoured the Board with an account of their method, seven employed Calomel. The remaining two relied upon, and were satisfied with, the effect of Sulphuric Acid. The Calomel was employed with Opium by six out of the seven: and both together simultaneously with Sulphuric Acid by four.

With regard to the mode of administration of Calomel, the following facts should be recorded.

In the County Gaol and elsewhere Mr. Wood found that eight, twelve, or fifteen grains of Calomel, with one or two grains of Opium, followed by Sulphuric Acid and Opium in frequently repeated doses, answered exceedingly well.

Mr. Hitchings's Commentary on this medicine should be given in full.—

"Calomel seemed to have a magical effect when given alone. In several cases in which purging was so continuous as to pass involuntarily into the bed, I found ordinary treatment useless, and in such cases trusted to Calomel alone, and to it I attribute the comparatively few cases of fully developed Cholera which occurred in my practice, taking into consideration the very large amount of Diarrhœa which came under my notice. In Gas Street there were but few houses in which I had not cases of Diarrhœa, not *single* cases, but every member of the family. I am sure I speak within bounds, when I say, that in that street alone I attended at least 100 individuals with Diarrhœa; and from my weekly return it appeared that I attended on an average 200 fresh cases per week, making during the prevalence of the disease about 1500 cases of Diarrhœa, while of confirmed Cholera I had only 45."

Sulphuric Acid, either alone or with Infusion of Roses, was largely used in a bad district with evident advantage; and in the general practice of another person, among all classes of society "it answered admirably," with or without Æther and Opium.

One practical remark of Mr. Freeborn's, which would probably be confirmed by the experience of others, should be given.—

"In cases where the cramps have been very severe, the skin cold, and the pulse small, feeble, and flagging, local applications of Mustard or Turpentine, or careful and well-continued Friction, with or without a Liniment of Chloroform, have seemed to do great good. I believe that in several of the cases under my care, the patients were on the point of falling into Collapse, but were rescued by well-applied Friction, which was fairly continued until reaction and warmth were established. At the same time Sulphuric Acid was administered in drachm doses every fifteen or twenty minutes."

Now this summary does not record the result of my own observation; and feeling sincerely grateful to my coadjutors, it seems but right that I should subjoin this in the form of commentary. In the first place, then, I must own that my opinion concerning the then state of our knowledge of the treatment of fully developed Cholera amounts to this, that there was no certain evidence that any drugs were of sure avail, and that it was only certain that rest, warmth, good nursing, and cold water, were essential, or all but essential, to any treatment whatsoever. And I further thought that great harm accrues to the character of Sound and Comprehensive Statistics, that engine of medical science which, next to accurate observation and a correct nomenclature, is the most valuable of all, by allowing deductions to be made and to pass current from data wholly inadequate. Of this I will give now a striking example. It had been impressed on my mind in the Epidemic of 1849, that, after all, it was probable that some kind of astringents would be found to be the true remedy in all stages previous to collapse, and I imagined that perhaps the best vehicle for these astringents would be some form of oleaginous demulcent. The day that I returned from abroad, Dr. Johnson's letter concerning the use of Castor Oil appeared in the Times. The statements as he furnished them gave but one conclusion, that no so valuable remedy had been before discovered, and statements from that amiable and accomplished physician were worthy of the fullest attention. I must say, however, that I did not agree in the reason assigned. I believed that it was not the purgative, but the oleaginous character of the remedy that was of service. The first three Cases that I saw in consultation, and my time allowed me to attend Cases in no other way, I recommended the use of the Oil, and it was administered as nearly as may be according to the directions he gave. In the first Case, after

four ounces had been given, the patient seemed better. There was more warmth, less vomiting, and less purging; but I was alarmed at the quantity to be given, and on my own theory gave Olive Oil instead. It was equally clear to me that the substitution was unfortunate. After a few hours the Castor Oil was resumed, and the kind of improvement which he graphically described immediately took place. Several ounces more were taken with no very marked result. The patient neither rallied nor became more collapsed. The two kinds of oil were given alternately, but the patient ultimately died. It so happened that immediately afterwards, with the same zealous practitioner*, two other severe cases were attended by me in the same house. I never saw any cases (excepting intense collapse cases) that promised less favourably. They were both treated in the same way as the last, but both are at this moment perfectly well. My experience therefore of the Castor Oil is, that it is curative at the rate of two cases out of three, a conclusion, at variance with the larger statistics subsequently published by the Medical Council of the Board of Health. Should any one ask, Why, with that experience, I tried it no more? my answer is, that just as it was a duty to try it on the evidence before me, so it was a duty to desist on the data furnished shortly after, when this method of treatment was examined and reported upon by the College of Physicians as decidedly undesirable. I have partly given this instance as thinking it a duty to record the facts; but it must be borne in mind that it is quoted as an example of the fallaciousness of percentages on small data; and the scientific reader will, I am sure, hold me blameless for not attempting to furnish statements on the results of treatment in developed Cholera, but for referring him to the masterly Analyses of the Treatment Committee of the General Board of Health.

The two other forms of Disease of which we have to treat, viz. Diarrhœa and Choleraic Diarrhœa, must not be so summarily dismissed.

In ordinary Epidemic Diarrhœa, I believe with my brother Practitioners here, what is certainly confirmed by the Board of Health, that the proper, the safest, and the most efficient treatment is by Astringents. It must be admitted, however, that no Astringent seems to be uniformly successful in checking the Disease—even, that is, in curable Cases. And, further, I think that it is worthy of inquiry whether the same Astringent is equally efficacious at different periods of the same Epidemics. I am inclined to believe that in Oxford, both in 1849 and in 1854, the Chalk Mixture with Tincture of Catechu and Laudanum was the best at the outset of the Epidemic. But, further on, it was comparatively inefficacious, unless moderate alterative doses of Grey Powder were added—and, at the close of it, the Mercury was not only useless, but injurious—the best treatment being that noticed as the best at the commencement.

* For obvious reasons the name is withheld.

In some cases, which however were comparatively rare, this treatment did not answer; the choice of the remedy was then difficult; but neither will our limits allow a full discussion of the relative value, as I understand it, of the various astringents, nor are my data such as to warrant it. But I must add this: I was so satisfied from what I saw of various cases, that rest in bed was necessary to give the fairest chance of recovery in a severe case of Diarrhœa, that in 1854 I used absolutely to refuse to attend even slight cases, unless the patients promised to go immediately to bed. Of the exceeding importance of this, I entertain no doubt. And I am satisfied, as far as medical evidence allows, that I have seen death accrue in more than one instance, from the neglect of this precaution in cases that otherwise would have done perfectly well. This remark applies both to cases of neglected Diarrhœa, and to cases that have improved under treatment, and have relapsed upon the patient's leaving bed at too early a period.

I am bound also to add, that I have tried the effect of doing nothing in Diarrhœa, beyond using moderate stimulants, as is often the custom on the Continent. I do not say that this is absolutely unsafe, but I cannot advise it. In several cases I saw the Sulphuric Acid employed with the most marked success, in others it utterly failed. But the reader will have noticed above, that in one district the Sulphuric Acid was far more efficacious than the Chalk Mixture, with or without Opium. That was in an exceedingly poor district: the Cases where I saw it fail were those of persons in the upper classes*.

With respect to the Cases of Choleraic Diarrhœa, I saw personally fewer than most of the district Practitioners. Concerning those that I did see, I think two facts worthy of record. First, that without expressing any opinion as to the rationale of the fact, I feel assured that five or ten grains of Calomel, with one or two grains of Opium, followed by Sulphuric Acid, or by a mild Rhubarb draught, with a 'Carminative,' or stimulant, would occasionally act in a manner truly surprising. For instance, a maid-servant in a neighbour's house one forenoon was seized with cramps, constant vomiting, and had very frequent evacuations: the skin was hot; urine was passed; the pulse distinct. I saw her at 2 P.M., and gave at once five grains of Calomel and half a grain of Opium. A similar dose was given in two hours, and at 6 she had a Rhubarb draught with Aromatic Confection. In the evening she was easy, the evacuations ceased, and the next day she was well. Such a case, or several similar cases, prove no more than that the treatment did no harm, and that, I think, such a case absolutely proves. The judgment of the Practitioner who believes Calomel and Opium to be desirable in such a case, must be either accepted or

* I am told by Mr. Palmer of Woodstock, that he has noticed this same fact among the poor of his district. This, if established, is pathologically interesting and suggestive.

rejected at the will of the critic; until such time as ample statistics collected from competent observers either confirm or overthrow the conclusions held by him as probable. In some cases of Choleraic Diarrhœa the Sulphuric Acid wholly failed, both with and without Opium. In the case of one of my own colleagues, when the Choleraic Diarrhœa came on to an alarming extent, it was tried for many hours without any advantage at all. The disease was arrested and his life saved by the Sulphate of Copper with Opium.

These conclusions tally in the main, I am glad to perceive, with those published by the Board of Health. Of the value of the elaborate Reports and the documents published by the Medical Scientific, and by the Medical Council of that Board, I feel that though it were almost impertinent to speak, yet that I could not speak too highly; they have great value in themselves, but they have a higher value in showing what may be expected of Medical statistics, when the State has fairly appreciated what benefit the people may obtain by an efficient organization under a competent Medical Commission. In the midst of all the painful uncertainties, and the crowd of unsolved problems that obscure the view of the reflecting physiologist and physician, it is cheering to look forward, with confidence that the time will come when the applications of combined observation to medicine will establish irrefragably the truth of some propositions, and eliminate others into the region of absurdities. And one other advantage it may be hoped will accompany this—and the School of Natural Science in Oxford will help to bring it about—that the educated and upper classes of society will gradually learn so much of the physiological truths belonging to the extraordinarily complicated histories of organized beings, that they will lend their powerful help to the support of all that aids the establishment of such truths, will endeavour to discountenance all such error, and will learn that great medical truths are no more matters of opinion, of which every man can judge, than the great practical questions that vex the Engineer; or than the great mathematical problems which are attained only by the life-long work of a few.

Concerning the treatment, one word more must be added. No Medical man here, I believe, doubts the great danger of neglecting Diarrhœa, the facility with which it is checked in far the majority of cases, by the methods lately named, and its exceeding tenacity when it has continued for some hours or days. No one therefore doubts either the great importance of an efficient division of Cholera localities into districts most conveniently situated for each Medical Practitioner employed, the establishment of house to house visitation, or of open Dispensaries according to the character and density of the population, or the value to the community, and in the end the saving of expense by such ministrations. But for the hearty and most willing labours of the Practitioners employed here in 1854, and

the kindness of the Clergy and their coadjutors, it is impossible to say, when the severity of the Diarrhœa is taken into account, what increase of fully developed Cholera cases the City would have witnessed. The University being absent could neither share the risks, nor lend its aid.

CHAPTER VI.

The Conclusions.

The previous pages have been devoted, as far as was possible, to a brief statement of facts. It remains, before altogether closing this Part of the Memoir, to determine whether we are justified in drawing from it any definite conclusions. Considerations on some special topics are therefore here presented to the reader.

Theory of the Cause or Causes of the Disease.

§. 1. The facts which have been advanced both as to the mode of origin of Cholera in other places, and in the Districts now under examination, and the apparent anomalies and contradictions which almost any of the usual opinions concerning its cause present*, induce me to state the Hypothesis which after very attentive consideration I have been led to form, from the knowledge which here and elsewhere has been within my reach. But *first* I must hazard certain statements which will probably receive general assent.

1st, Diarrhœa always coexists with Cholera in any given locality, and is not communicated from person to person.

2nd, Cholera may arise without the suspicion of contagion †.

3rd, Cholera may certainly be conveyed from place to place by human agency ‡.

4th, It can scarcely be any longer doubted that the evacuations of Cholera patients are capable of communicating the Cholera ‖.

5th, It is quite certain that in the majority of cases, the Cholera evacuations do not communicate the Cholera.

6th, It is quite certain that in localities apparently exceedingly prone to development of the Cholera, Cholera, which is imported to them, may not be propagated §.

I think it is impossible for any one to consider these statements, without pre-

* See a summary of these at p. 4, Dr. Baly's learned, laborious, and valuable Report on the Epidemic Cholera, published by order of the College of Physicians of England: a work worthy of the Translator of Müller's Physiology.

† Case at Oakley, p. 42.

‡ Hailey and Witney, pp. 43, 44.

‖ See Dr. Budd's papers in the Provincial Association Journal, October 1854, and Dr. Alison's papers in the Edinburgh Med. Journal. December 1855.

§ Case at Wantage, p. 43.

vious bias, and with attention, without coming to the conclusion that not one cause, but more than one cause, must be in operation; and that it is by the coincidence of two or more causes that the true Cholera is produced.

General Phænomena of the Disease in the Oxford District.

§. 2. This I proceed further to elucidate by stating the forms of the Disease, which I believe to have occurred here between August 1 and November 1. From the general survey of the whole City which, as Consulting Physician to the Board of Health, it was my duty to take, and from the necessity of giving almost my whole energies to any work in which I could aid the Board, or my Medical friends, I necessarily from the first looked at the progress of the Epidemic as a whole. Nothing could be more striking than to see how differently the population was physically circumstanced from what it ordinarily is. I do not mean to say that every person had Diarrhœa, or that every person was on the verge of Cholera, nor that every person was consciously affected; but I do state as my firm belief, from what I learnt of the number of persons who were prescribed for by the Chemists, and were therefore relieved without being returned in the Reports, and from the remarks which were made to me, that far the majority were under some unusual influence. But what was this? Was it Cholera? Certainly not. Was it any thing like Cholera? Not at all. It amounted sometimes to this, that a person ordinarily constipated, and taking an Aloetic pill daily before dinner, for the months of August and September and October did not need it, but did need it afterwards: that a person who had one evacuation daily had now two, being otherwise perfectly well: that a third had a sense of weight referred to the epigastrium: that a fourth had slight nausea; these last having no variation in the character or frequency of the excretions, as the two first had. I am as sure that there was no fancy in this, as I am that the population feels hot when the thermometer is 90° Fahrenheit. What then? Is not this perfectly explicable by some abnormal condition of the surrounding atmosphere, or of the imponderable agents which act in some yet unravelled way on animal organisms? Is it explicable on any other hypothesis? Are there any other conditions common to a whole population than those furnished by these agencies? And does not this tally exactly with the glimpses which Mr. Glaisher and Mr. Johnson have given us? But then the effect is not Cholera, nor any thing like Cholera; nor is it conceivable, when we reflect on the various phænomena which the whole history of Cholera presents to us, that Cholera can be *only* the development of an atmospheric state.

In the Diagram which follows I have represented the extent and kinds of Disease which occurred in Oxford. Immediately after the Epidemic was over, great pains were taken to record the precise variations in the phases of the "Choleraic disease." This Table was then framed, and it was ascertained that it tallied exactly with the

observations of some of our most active Practitioners. It need hardly be remarked that only the prominent characters, and not all the symptoms of each variety, are recorded.

FIRST GROUP.

Disorder often Unnoticed.			Diarrhœa.			Choleraic Diarrhœa.
Variety 1.	2.	3.	Variety 1.	2.	3.	
Motions slightly more easy.	Motions natural.	Motions natural.	Slight Bilious Relaxation;	More Bilious Relaxation.	Bilious Relaxation.	Frequent *Bilious* Purging.
	Uneasiness in Epigas.	Uneasiness in Epigas.	Slight pain.	No Pain.	Pain in Stomach.	Severe pain in Stomach; and sometimes in Limbs.
		Slight Nausea.	Nausea.	No Nausea.		Frequent Vomiting.
					Vomiting.	Sometimes, cold surface, and feeble pulse, and death; Purging *Bilious* to the end.

SECOND GROUP.

Cholera.				
Variety 1.	2.	3.	4.	5. (very rare.)
Rice-water Evacuations.	Rice-water Evacuations.	Rice-water Evacuations.	Rice-water Evacuations.	No Evacuations passed.
No Pain.		Cramps.	With or without Cramps.	
No Vomiting.	Vomiting.	Vomiting.	Vomiting.	
No Collapse.		Collapse.		Intense Collapse.
			Urine wholly suppressed.	
				Death in very few hours.

The varieties of symptoms here recorded are those which certainly were observed in this place; the question is concerning the interpretation of them. No one doubts that in a Cholera period, 1st, *persons die of Diarrhœa, and of Choleraic Diarrhœa, without passing into Cholera:* and, 2dly, *such Cases do oftentimes pass into Cholera.* It is therefore right to examine most critically the confines or neutral ground between two Diseases, which are in themselves so widely apart, in their danger so unlike, in their relation to treatment so different, and which although so distinct do yet *pass from one into the other.*

Now the hypothesis is, That the First group are produced by "Atmospheric influence," (let the general cosmical conditions be so named,) without any specific poison; and that the Second group are produced by the same Atmospheric influence, as the first group, operating on discharges from the bowels, and producing a specific poison: the poison capable of acting on the individual who produced the discharges which can be so altered, or on other persons: the discharges innoxious, or incapable of communicating the Disease *until so altered;* but when so altered, either within or without the body, capable of distribution through the atmosphere, probably either in a dry or in a gaseous state, and of absorption by the lungs; or capable of solution in water, and of absorption by the digestive organs. Or, more briefly, one cause (the Atmosphere) produces the First group of disease, and along with the disease an organic product, (alvine discharge), which is innocuous until altered by the very cause which produced it, and then it becomes the cause of the Second group: so that it might be theoretically, and perhaps truly, said, that if the cause which produced the Diarrhœa ceased before the discharges could be acted upon, then they would remain for ever innocuous.

I have no desire to warp the facts which occurred here to prove the truth of this or any other hypothesis. Moreover, if the hypothesis be admitted to agree with the facts in this district, it need not of necessity agree either apparently or really with the facts in a more extended one. Yet the area of one county or of one Cholera district should furnish to the observer all the data for a correct induction; the variations which would be noticeable between one district and another, being to be traced, not to different *causes*, but to different intensities in the mode of operation of the same causes; as, for instance, a greater degree of heat in one district; of moisture and mist in a second; of consequent Diarrhœa in a third; of evacuations converted into "Cholerine*" in a fourth; of altitude, or of density of population in a fifth; and so on. The result of course would be a different order of phenomena resulting from the varying combinations; as the phenomena of an Epidemic in India; or of the outbreak in Golden Square in London.

The reader will have noticed that the facts, even in our outbreak, are by no

* Registrar General's Report on Cholera, 1848–9.

means reducible to any single or simple cause, unless we allow such latitude to the imagination as would make the attainment of any sound conclusion hopeless. For instance, few persons will doubt the connection between some Cholera outbreaks and the condition of the Water—as in our County Gaol; or in the more extended districts elaborately and meritoriously investigated by Dr. Snow. How does the distribution of Cholera evacuation by Water works explain the case of the man who, in a remote country parish (Oakley), with no traceable communication with any locality affected by Cholera, falls ill, while at work in a field. Think of the life, habits, and general circumstances of a farm labourer in such a place. Then he goes home, and all his family are attacked. Any just hypothesis of Cholera must explain a single case like this just the same as it should explain the devastation of a city. Both of these cases are perfectly intelligible, if we assume that the atmosphere or its concomitant imponderable agents produce on the whole human organism an effect resulting in Diarrhœa; and then convert the product into an active poisonous matter or matters. It would carry this Memoir into an altogether improper length if all that can be advanced, either in support of or in opposition to this proposition, were discussed. It is sufficient to remind the reader of the ever familiar illustration of what is known of the mode of propagation of Small Pox, or the Vaccine Virus; and of what is surmised of the nature of infection in Typhus, or in Scarlatina. The propagation of Cholera is probably more complex by one step than either of these diseases. It is tolerably certain that the poison of Typhus is a gaseous body, capable of dilution by and in atmospheric air, until it becomes perfectly innoxious: it is highly probable that Scarlatina is not merely a gaseous body, but a distinct organic matter not yet reverted to gaseous simple or compound substance. But these poisons operate at any time, though more powerfully at one time than another. Cholera operates only at certain times, and these times, or this combination of Meteorological circumstances, occur but rarely.

There follows a great Practical and very Simple Conclusion from considerations of this nature, that it is important beyond all power of expression, *to destroy with acids, or caustic alkalies, the organic combination of all Diarrhœa and Cholera evacuations*, immediately after they have been passed; and to apply the same precaution to all evacuations in any way resembling them, as I have elsewhere, in common with others, related*.

* See especially Dr. Alison's paper above quoted, Edin. Med. Journal, Nov. 1855, with the references he gives.

On the Spreading of the Disease.

§. 3. Two conclusions seem to be inevitable from this Epidemic, and both seem to be borne out by the history of Cholera in other places, both in 1854 and in previous Visitations.

1. That the cases may occur, as it is said, sporadically.

2. That they may spread by communication.

As to those that occur sporadically, it is generally supposed that there is some traceable cause connected with Sewage, Foul Water, or the like. But no such cause could be shown in the first case in Oxford, or in the Oakley cases, or in the Little Milton cases. But then the evidence is only negative in all these instances: there may have been communication by clothes or otherwise undetected. It is not however easy to believe, that in all the instances of undiscovered communication there had been either unknown contact or intentional deceit. In all questions of this kind we are compelled, as in various other subject matters, to take as evidence the greater probability; and this being so, we must conclude as probable that Cholera often arises without any communication with infected districts. So it is to be believed it arose in the two first cases in Oxford.

But, secondly, it is not to be doubted that it also spread in this district by communication. On this point, at the close of the Epidemic, the following question was addressed to the Practitioners who had been known to have attended Cholera cases. The most important of the answers are added.

I. Can you communicate any *facts* which have occurred in Oxford, to lead you to believe the disease to be contagious? and in what manner do you believe it to have been communicated?

In answer to this question Mr. Freeborn states:—

"On the 14th of September the husband of a laundress residing with her family, and carrying on business in —— Yard, the inhabitants of which had been perfectly healthy up to that time, removed to his house the blankets, sheets, and other clothes of a person who on the night of the 13th died of Cholera.

"The neighbours, angry at the removal of the clothes into their locality, took off the handle of the pump, and so for a time prevented the laundress from obtaining water. The blankets were then burned, but in the course of the day the sheets, &c. were washed by her and a woman in her employ.

"At 10.30 P.M. on the 15th of September, a child of this family, three and a half years old, previously perfectly well, was attacked by Cholera and died at 10.30 A.M. on the 16th.

"The surviving members of the family were immediately removed to the Field of Observation, in the hope of saving them, but on the 21st of September, an infant, about sixteen months' old, was taken ill and died.

"From this time a succession of cases of Diarrhœa, and one other case of Cholera, occurred in the same yard, and Choleraic Disease continued there until nearly every person in it had suffered in greater or less degree.

"I can also bear testimony to another case, which occurred in St. Clement's, of a woman who washed the clothes of a Cholera patient, took the disease next day, and died."

Mr. Hansard writes:—

"Mrs. S. of Thames Street visited her brother J. R. in Floyd's Row, who was ill of Cholera. He died, and on the day of his death Mrs. S. was seized with vomiting and urgent Diarrhœa. This continued through the following day, ceased on the next, but returned on the 3rd. Collapse occurred, and though she appeared entirely to rally, she died on the following day. Her case was the first in the street, in which several cases occurred subsequently.

"J. B. was attacked by Cholera in its most malignant form on Sep. 16, and died on the same day. Mrs. H. and Mrs. E., the two nearest neighbours, were frequently with him. On the 17th Mrs. E. was seized by the disease. Two of her children were also attacked: one died, the other and the mother had severe Choleraic Diarrhœa and vomiting.

"Mrs. B., of Pollard's Yard, was attacked on the 11th of September, and died on the 15th: between which dates two of her children were attacked, both of whom ultimately died.

"A. H. had had Diarrhœa for four days, when on the 13th of September he was attacked by Cholera. Mr. and Mrs. W., living in the next room, were constantly in attendance on him. Mr. W. was attacked on the morning of the 24th, and Mrs. W. had an attack of Diarrhœa and cramps in the stomach.

"Maria W., after nursing two cases of Cholera, returned home to die."

Mr. Hitchings says:—

"Mrs. L., who lost her husband by Cholera, took his clothes and bedding to New Hincksey, and then washed them, and exposed them in the garden at the back of the house. On the following day a child in the next house was taken ill, and subsequently seven others, living in the three houses of which Mrs. L.'s was the centre, were attacked. From circumstances of a similar kind which came under my notice in '49, I conceive that the humid exhalation from contaminated bedding is a most fertile source of propagation, or rather regeneration, of the Disease. In Mazey's Yard the air was quite oppressive from the smell of Cholera. At Hincksey I could detect the smell where a child had lain ill two days.

"From such circumstances I cannot but think that by the removal of persons attacked from their habitations, the spread of the disease might be very much checked. Another reason why the treatment of cases in the town is objectionable is, that the evacuations are thrown into privies, which thus become, as it were, hotbeds of the disease. In Bryan's Yard the privy was already offensive and dangerous to health, yet into it were thrown the evacuations of eleven Cholera patients."

Mr. Owen expresses his belief, founded on cases which have come under his own observation, that soiled Cholera clothes are especially dangerous when allowed to dry and then again disturbed.

To these cases of presumptive dissemination of the Disease by means of communication from house to house, and of communicability through the agency of clothes, within the town, must be added all the cases in the neighbourhood distinctly traceable to intercourse with Oxford. The isolation of country districts makes them

peculiarly favourable for investigations of this nature: the pertinent phenomena are more easily separated from others. There is very little doubt but that the two first cases in Oxford arose without previous communication with other cases; and it is most interesting to observe that the first case did not give rise to any others; it occurred in a superior house in a high and healthy locality. The second seems to be the nucleus of a nest of cases presently to be described; it occurred in a low and poor house on clay. (See Plate 2, p. 21.) Such an instance tempts us to jump to a conclusion concerning the conditions which cause the spread of the disease. If instead of *cause* we say *favour*, we shall be right. The country district teaches the same lesson. Read the History of Witney. The healthy countryman of Hailey is poisoned in Oxford: goes to his open village, has the Cholera; and recovers, and is at work now (1856). The disease in Hailey ceases with him. The man of Witney, who takes the medicine to him of Hailey, goes back to his sewer-stinking alley, has the Cholera, dies; and round him, as ripples that circle round a stone that plunges into smooth water, the Pestilence circled from his house round the alleys and low spots of Witney.

The other place which adds its quota of evidence in favour of this kind of communication is Garsington. The tragic history of this village need not be repeated here. (See p. 44.)

There were two other classes of instances discussed at page 42: 1st. That wherein the Cholera seems to have appeared without previous communication with Cholera districts, and in which the Cholera, when there, did not spread; viz. Albury, Little Bourton, Brize-Norton, Harwell, Lechlade, Winslow.

This class appears of course to correspond with the first case in Oxford.

2nd. The class of instances wherein the Cholera seems to have occurred without previous communication with other places, and did spread; viz. Abingdon? Banbury, Brill? Little Milton.

This class appears to correspond with the second case in Oxford.

The district round Oxford then gives, as far as we can obtain it, evidence to the same effect as that given by the City, viz. that the Cholera arises both sporadically, and by communication.

Houses not very bad a means of spreading the Disease.

§. 3. Immediately connected with the last section naturally follows this. If persons are closely packed together, it is difficult, perhaps impossible, to decide whether circumstances common to the individuals, or their contact with each other, is the cause of the appearance of many cases of Cholera in the same locality. For instance, consider the character of the dwellings where the seven Cases, that followed upon the second Oxford Case, were found. They occurred in six different families,

all living under one roof. Under this same roof there were eleven Cases. Of the six families, two had two rooms each, and the remaining four families each one room. The families, it is true, were not large, in the whole not exceeding twenty-seven persons. But then the eight rooms they had among them did not stand on more ground than twenty-eight feet by eighteen feet, exclusive of the external walls; they were placed on two floors, and each room contained about 740 cubic feet. In four instances there was no additional accommodation for each room; cooking, washing, living, and sleeping, all went on in the same apartment: two of the families had an additional room. It will be noticed therefore that among the four families with a single room, there were 3040 cubic feet of air, including the displacements by furniture, stores, and rubbish: in other words, to each of the sixteen persons about 190 cubic feet apiece. In the four front rooms, where the two families had each a living room and a bed room, there lived eleven persons. These eleven had each on an average about 260 cubic feet of air. But then they changed the air day and night, an advantage denied to the sixteen in the back rooms.

Opposite is a plan of these tenements. They are described thus particularly because they are *not* especially bad: an over-coloured picture of wretchedness destroys the purpose of him who draws it: many rooms in Oxford are far worse than these. There is an open street in front; a passage at the side: a yard thirty-five feet long behind: there was a privy behind not specially foul; a pump removed twenty feet from it. A privy worse by far was attached to an adjoining house, and there no Diarrhœa of note occurred. There is therefore here the one condition of too many people in too small space. This is, in plain words, *life in poisoned air*.

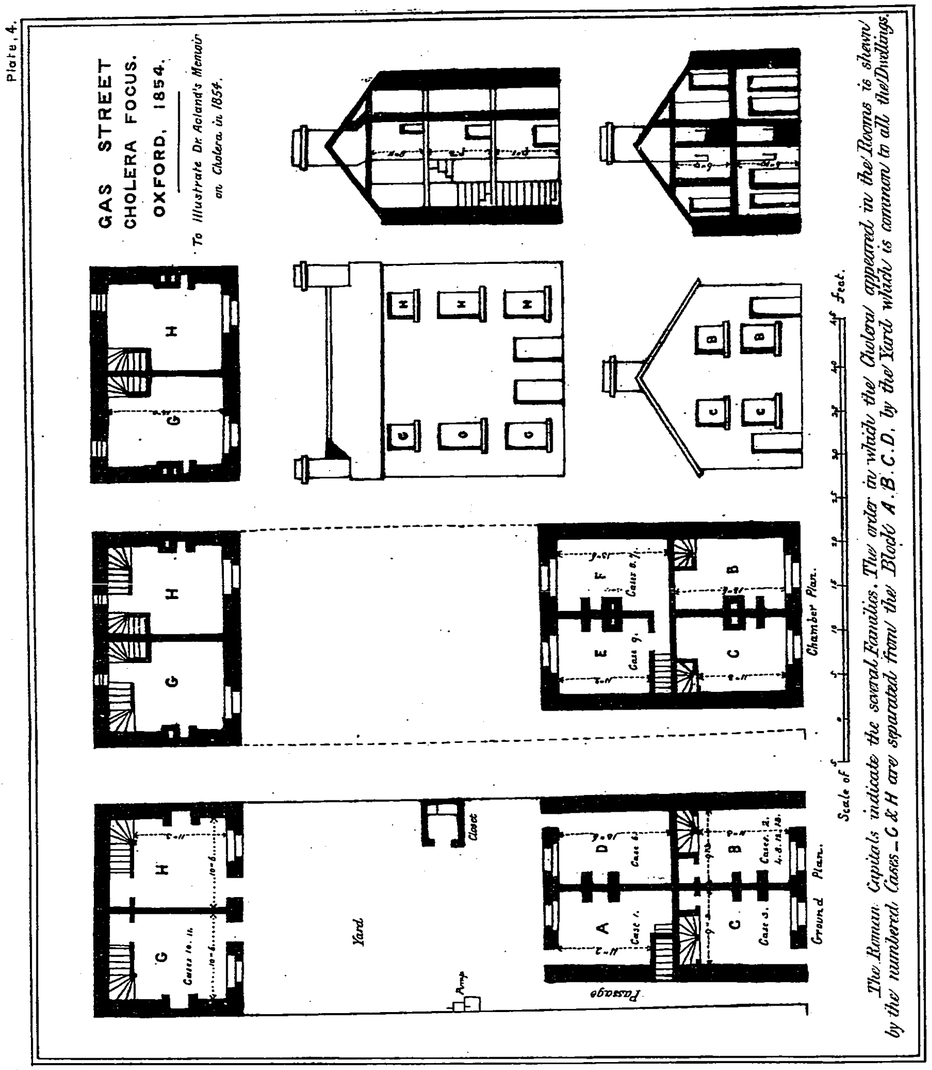
The history might be more easily enlarged upon than, as is my duty, curtailed. Let it then only be repeated: this is not a bad house; not a bad locality, as houses and localities are counted bad; but it is a kind of house, and a kind of locality, and this is a kind of life, for those who live it, which begets eleven cases of Cholera upon two floors, built on a piece of ground about 28 by 18.

The inhabitants of Oxford and the surrounding district are now in a position to calculate the chance of their safety in a future Epidemic, and to form an estimate of the propriety of adopting such preventive sanitary measures as experience and science suggest.

Plate 4.

GAS STREET
CHOLERA FOCUS.
OXFORD, 1854.

To Illustrate Dr. Acland's Memoir on Cholera in 1854.



The Roman Capitals indicate the several Families. The order in which the Cholera appeared in the Rooms is shewn by the numbered Cases. C & H are separated from the Block A.B.C.D. by the Yard which is common to all the Buildings.

Previous Preparation is necessary, and economical.

§. 4. The noxious effect of foul water, the danger of improper living, and the risks of imperfect nutrition as exemplified in Oxford, have been sufficiently dilated upon. One other circumstance remains to be noted.

In this Epidemic several Cases occurred at our House of Refuge. This fact does not at all invalidate the value, or throw doubt on the necessity of such an institution. It directly points to another moral.

The Cholera came upon the City in a state comparatively unprepared: no Hospital was ready, till the Epidemic was at its height: no House could be hired for a Refuge. A large Field was obligingly granted by Mr. Brooks. This might have served its purpose well, but the thorough separation of the two establishments, and the procuring furniture for the Hospital, was allowed to take much time: no efforts on the part of the Lady and the Superintendent in charge could meanwhile keep the Hospital and the Refuge distinct. Indeed for several days there was but one privy for both departments, and that was on the side of the healthy persons.

Moreover it was believed to be necessary that all work should be executed through the Workhouse. The Workhouse was to supply food, crockery, servants. It took time of course to turn a rigorously economic establishment into one in which the first elements, as well of efficiency as of economy, are, saving of time, and doing what is to be quickly done also in the best manner. We therefore waited two or three days, or even more, for what might have been had for a trifling sum within an hour in the Town; as crockery, chairs, candlesticks, and the ordinary requisites of a sick room.

These things will never occur here again: they are only now named for the sake of other places. We had to wait, at various times, for beef-tea for convalescents; and more than once received it unfit for use. It was sent half a mile to the Central Police Office, when we might have had it from a respectable shop twenty yards off from it: and finally were obliged to set up a kitchen close by in the Town Hall. This result had been foreseen and stated: but the Authorities had felt themselves bound by the routine of the Workhouse, and it was only after failure that the obvious and efficient methods were admitted to be right. The circumstances of towns and districts vary. There is not one rule for all. At Witney, close by us, I believe that there was no failure even at the outset of the arrangements: the Board of Guardians from the first implicitly relied on their Medical Adviser, and energetically conducted their work, as I believe we did in the end, to a successful issue.

Summary of the Principal Conclusions.

§. 5. 1. The history of both the City and the surrounding District unite in giving weight to the belief in the origin of Cholera without communication with other Cholera districts.

2. Both the City and the District give evidence of the occasional communication of the Disease from place to place, and from person to person.

3. They both lead us to the conviction that places, and attendants on Cholera patients, may enjoy a perfect immunity from Contagion.

4. From the survey of the City, we are inclined to believe that this immunity is less probable in proportion as less attention is paid to the destruction of the Evacuations.

5. Contact with the Evacuations is therefore exceedingly dangerous.

6. The Hypothesis which refers Diarrhœa to the state of the Atmosphere, and Cholera to the metamorphosis of Diarrhœa Evacuations by and in that Atmosphere, derives support from these considerations.

7. The poison of the Evacuations may be conveyed through the Air, or by the agency of Water.

8. Therefore poisoned Water, though one means of spreading the Disease, is not the only means.

9. For these reasons, and from the facts observed, we may conclude, and do assert, that crowded dwellings and imperfect ventilation are dangerous in the highest degree, during the prevalence of a Cholera Atmosphere, to those who are subjected to them; just as they are ruinous to Health at other times.

10. We must therefore conclude, that such dwellings, and such bad ventilation, are dangerous, not only to the persons exposed to them, but to the whole District or Town which surrounds them.

11. A low scale of Diet favours Diarrhœa, and a better Diet tends to check it.

12. Occupation exercised no marked influence in this District, and indeed persons in easy circumstances were more attacked proportionally than night-soil men, who work mostly in the open air.

13. The lower half of this City was most attacked; but the lives of those who reside in the upper and drained portions are unquestionably endangered by the condition of the lower and undrained parts.

14. Preparations for Epidemic Disease should not be left till the Disease appears: there should therefore be Wards in every Town, proper for receiving persons suffering from such Disease.

15. Common prudence suggests that these Wards should in Hospital Towns of moderate size be attached to and be managed by the Hospital: that in smaller Districts, as the law now stands, they should be under the control of the Guardians; and that in a few of our largest Towns, separate establishments may be founded for the purpose.

16. Such habitual preparation is, if discreetly contrived, less costly than the arrangements necessarily resorted to during the emergency.

17. All the known conditions for favouring the spread of Cholera existed in Oxford: some have been attended to and remedied: some have been neglected and are not remedied. All known local causes may, by systematic forethought, be either removed from the City, or anticipated, and guarded against †.

† Any one desirous of prosecuting the inquiry suggested by this Part, should compare these Conclusions with those given at p. 214 of "Reports of Epidemic Cholera, drawn up at the desire of the Cholera Committee of the Royal College of Physicians, by Dr. Baly and Dr. Gull; at p. xxv. of the "Third Annual Report of the Irish Poor Law Commissioners, under the Medical Charities' Act;" at p. 48 especially, but indeed the whole, of the "Report of the Committee for Scientific Enquiries in relation to the Cholera Epidemic of 1854, appointed by the General Board of Health;" and two papers on the Exciting Cause of Epidemics in vol. xiii, 1854, of the British and Foreign Medico-Chirurgical Review.

PART II.

ARRANGEMENTS MADE IN OXFORD DURING THE EPIDEMIC.

CHAPTER I.

Arrangements adopted during the Epidemic of 1854.

§. 1. On August the 6th, a Case reported as genuine Cholera appeared in Walton Road, Jericho; it was fatal. Between that day and the 31st of August inclusive, 5 Cases of Cholera, of which 2 were fatal; and 5 of Choleraic Diarrhœa, of which all recovered, are recorded.

On the 31st of August the Board of Guardians

> Ordered—That the Medical Officer of this Incorporation be authorized to employ such Medical assistance during the prevalence of the Cholera as he may think necessary, and that they be remunerated at the expense of this Board *. Also
>
> That a Committee be appointed to act in concert with the Commissioners as a Board of Health. That the Committee have full power to rent houses for the removal of persons from localities infected with disorder, and to supply medicine, &c.
>
> That the following Gentlemen be the Committee: viz. the Chairman (Mr. Carr), the two Vice-Chairmen (Mr. Cartwright and Mr. Boddington), Mr. Alderman Butler, Mr. Alderman Sadler, and the Mayor (Mr. Alderman Spiers), with power to increase their number.

A meeting of this Board so constructed took place on the 2nd of September, and agreed to obtain the use of the field in Jericho, known as Brooks' Close; to convert a shed in that field into a House of Reception or Observation, with three rooms, properly floored, warmed, and lighted; to erect in the same field one or more Tents as temporary accommodation; and to arrange with the Street Commissioners, that, whenever any case of Cholera occurred in the dwellings of the poor, the house should be immediately cleansed and lime-washed.

Between September 1, and September 7 inclusive, 15 more Cases occurred in the widely-separated localities of Blackfriars'-road, Jericho-gardens, St. Clement's, on the River, Market-street, St. Aldate's, the Gaol, Hythe-bridge, and elsewhere. Of these 15 Cases, 12 were fatal, and only 3 ended in recovery.

* In consequence of this resolution the Union Medical Officer (Mr. Wyatt) obtained the assistance of Mr. Hitchings and of Mr. Godfrey.