gence and the spirit of enterprise among that class of builders who provide houses for the labouring classes.

The great lesson taught by the late epidemic is, that in future we must proceed to deal vigorously with these standing causes of disease and pauperism, if we are really in earnest to rescue our population from the ravages of fever and cholera.

2. *The Removal of the People.*—The only escape from the fatal effects of permanent causes of disease, which cannot at once be removed, is to be found in the second of the methods indicated above, to wit, the removal and dispersion of the people. This practice was found to be very successful at Edinburgh during the epidemic of 1832, and it was made matter of special regulation by the General Board of Health in all the parishes affected during the late outbreak of the disease. Large roomy buildings in healthy localities were sometimes made use of; at other times it was found necessary to erect suitable wooden sheds, and in several instances tents were used. The advantage of this method of procedure depends on the fact that cholera rarely remains long in the same district. It attacks individual houses, groups of houses and streets; so that between 30 and 40 per cent. of the cases over a whole town occur in houses where more than one person has already suffered. In *groups of houses* attacked the percentage rises very much higher, and the danger to the people, by leaving them in their dwellings, is enormously increased. By referring to the examples of these outbursts already given, it will be found that no fewer than 87 per cent. of the cases and 61 per cent. of the deaths took place in houses where more than one person had suffered from cholera. Even in these instances, however, the danger does not in general continue long. If the people be removed and kept away for a week or ten days, and if their houses be limewashed during their absence, they may return home with comparative safety; while the whole number of attacks and deaths of persons removed to the Houses of Refuge is very much below what it would have been had they remained at home. The following table will show the results of this preventive measure:—

STATISTICS OF HOUSES OF REFUGE.

Houses of Refuge.	No. of Inmates admitted from affected Houses.	Total Cases of Cholera in the Refuge.	Deaths.
Edinburgh, City parish .	270	..	..
City parish, Glasgow . .	401	19	5*
Barony parish, Glasgow .	406	6	3
Sheffield	145	4	2
Bristol	210	..	..
Dundee	259	4	..
Total	1691	33	10

* The large proportion of attacks and deaths in the refuges in Glasgow may be accounted for by the fact of their having been placed in localities affected by cholera.

The very small proportion of attacks and deaths which this table shows is quite sufficient to prove the efficacy of the Houses of Refuge as a means of saving life. All the persons admitted into them were taken from houses where the disease had actually appeared, or from their immediate vicinity. That many were powerfully under the influence of the poison of cholera is proved by the fact, that a large proportion were seized with severe choleraic diarrhœa, either before or within a day or two of the time of admission; but as all the inmates were inspected by the medical officer twice, or oftener, during the day, very few even of these severe cases passed into cholera. The mortality from the epidemic has varied from 1 per cent. to 3, 4, and even 7 per cent. on the entire population of towns. These proportions include not only those in localities more immediately affected, but the unaffected population also. *The parties removed to houses of refuge were all taken, as has been stated, from infected houses or localities, and yet the table exhibits a proportion of deaths to the inmates of less than* 0·6 *per cent.* It was observed that the general health of the people was materially improved during their stay in the Refuge, in some degree, no doubt, from the better diet provided for them, but mainly, I conceive, from their having been withdrawn from infected localities.

It is very much to be regretted that this system was so inefficiently carried out in many of the affected parishes. I found almost everywhere a want of intelligence in appreciating its importance; and I hardly know an instance, except in a few of the Scotch towns, in which a House of Refuge was prepared before the disease made its appearance. Even after hundreds of persons had died, I have occasionally experienced great difficulty in inducing Boards of Guardians to provide the needful accommodation. This has arisen partly from the obstacles which popular prejudice has thrown in the way of obtaining suitable premises—one of the necessary fruits of the doctrine of contagion—and partly from the fear that pauperism might be increased. The marked beneficial results which have been observed wherever a House of Refuge has been properly worked, warrant me in stating that a great many lives have been sacrificed all over the country from want of attention to the orders and notifications of the General Board of Health in regard to this matter.

SECTION III.

MANAGEMENT OF CHOLERA THROUGH ITS PREMONITORY STAGE.

1. *The Premonitory Stage of Cholera.*—It has been an observed fact ever since cholera became known to the medical profession, that by far the greater proportion of cases are preceded by a distinct premonitory stage, varying in intensity from slight disturbance in the functions of the intestinal canal onwards to the production of symptoms of a decidedly choleraic character; and in duration, from several days to a

few hours, before the full development of the disease. Cases, no doubt, take place in which the premonitory stage is either absent, or so short in its duration as hardly to attract notice; but such cases, on rigid inquiry, were found to be very few in number; while many, supposed to have been sudden, proved, on investigation, to have been preceded by a well-marked premonition.

During the epidemic of 1831–32 these circumstances did not escape the observation of the medical profession in this country; and there were few points in regard to cholera on which a larger amount of concurrent testimony could be cited than the almost universal prevalence of a premonitory stage, and the absolute necessity of directing the medical treatment specially against it. It would be easy to quote examples showing that the progress of the disease had been traced by "watching the appearance of the dejections: at first, dark coloured and feculent, becoming gradually paler; and lastly, colourless, like rice-water." In one instance no fewer than 500 cases of cholera were minutely investigated, and were, almost without exception, found to have been preceded by diarrhœa of from ten to twelve days' duration; and in some instances even beyond this period. Medical men concurred in stating, that in the early stage cholera admits of being cured with certainty; and that were attention paid to the premonitory diarrhœa, the disease might "be driven out of the country." Dr. Barry, who was no mean authority in such a case, said emphatically, in regard to the diarrhœal stage, "Stop it, and you save your patient."

It became customary at the time to issue notices, warning the people of the danger of delay, and to open dispensaries for the gratuitous distribution of medicines; and no doubt many lives were saved by this procedure. The establishment of a kind of medical police, to watch over the health and sanitary condition of the people in affected districts, was first recommended by the Central Board of Health in 1831. The late Dr. Kirk, of Greenock, in his "Practical Observations on Cholera Asphyxia," published in 1832, strongly advised that this inspection should be made compulsory, for the purpose of discovering premonitory cases. In the same year a partial trial was made of it in a district of Newcastle-on-Tyne, and another by Dr. Brown, of Sunderland, in an outbreak of cholera at Hetton in August, 1832. But the real importance of house-to-house visitation as a preventive measure was not at that time understood or recognised; and subsequent experience has proved that the methods proposed for carrying it out would have been impracticable.

The local Boards of Health were more engaged in dealing with cholera as a disease than as a pestilence, and every conceivable plan of treatment was tried under circumstances nearly as hopeless as those which accompany gangrene after enteritic inflammation. The result was, and still is, that in its fully-developed form cholera is a disease which admits of little aid from medicine; and that the real element in its management is TIME—to which all methods of treatment should be considered as merely subsidiary. In the early stages there is no disease more easily manageable, and in which so great an amount of human life and suffering can be saved; but in its later stages there is hardly a disease more completely beyond human control, and of which so large

a proportion of cases must inevitably perish. Cholera is, of all others, a disease which ought to be managed by preventive medicine; but it is, of all other diseases, that one in which the smallest amount of reliance should be placed on medicine simply curative.

The experience furnished by the cholera of 1831-32 has been amply confirmed by that derived from the late epidemic. The existence of a premonitory stage, and the comparative ease with which the patient may be treated in that stage, have been fully demonstrated, so that both may now be considered established facts of medical knowledge: but, in addition to these, strong additional evidence has been afforded of the unity of cholera throughout all its stages. So thoroughly has this latter fact been impressed on the minds of many eminent practitioners, that I have occasionally experienced considerable difficulty in obtaining statistical data, in consequence of its being found "impossible to draw any line between the most severe cases of cholera and the ordinary diarrhœa prevailing, warranted by any pathological distinction." This conclusion, which was stated by eminent members of the medical profession, rests on that kind of evidence which is derived from careful observation; but during the late epidemic I obtained striking statistical evidence of the same fact.

It was observed in Glasgow that the female sex was more liable than the male to attacks of cholera.

Without entering into the reason of this greater apparent susceptibility, we may assume it as a law of the disease applicable to that locality. If the diarrhœal forms be part of the epidemic, and have a tendency to pass into true cholera, we should expect to find not only that the female sex was more liable than the male to such forms, but that the liability would increase as their severity increased. This was accordingly found to be the case, as the following table will show:—

PERCENTAGE of Attacks, in different stages, of Choleraic disease in Males and Females, in Glasgow.

Classes of Cases.	Number of Cases.			Percentage of Attacks in each Sex.	
	Males.	Females.	Total.	Males.	Females.
I. Diarrhœa and Bilious Purging .	331	432	763	43·4	56·6
II. Cases approaching to Cholera, with Rice-water Purging, &c. . .	130	195	325	40·	60·
III. Cholera	851	1320	2171	39·2	60·8

The number of cases appears to me sufficient to warrant the conclusion as to the unity of the entire epidemic, especially as the two first

classes of cases were treated in the same districts in which cholera prevailed. Had they occurred in localities where developed cholera did not exist, they might have been considered as cases of diarrhœa, accompanying the disease, but not identical with it; but under the actual circumstances, the evidence appears conclusive. Another equally important proof is arrived at through the comparative mortality of different stages of the disease.

The great number of choleraic cases brought under treatment in all parts of the country, and the pressing calls on the time of the medical officers, have rendered it a matter of impossibility to obtain a precise account of the features of the entire epidemic, but tables compiled from the returns of Dr. Miller, and the reports of Dr. A. M. Adams, and Dr. J. M. Adams, three of the medical superintendents in Glasgow, give some interesting and valuable particulars in regard to a large number of these cases. They form, as it were, a chart of the disease throughout its entire stages, and exhibit at the same time, in a very satisfactory manner, the results of early treatment. The total number of premonitory cases treated amounted to 1445, and the total number of cases of developed cholera to 392. They afford examples of nearly every progressive stage of the disease, from simple diarrhœa without complication to developed cholera, the cases passing in their progress through important changes by the addition of symptoms increasing in danger, while the mortality is also found to increase in a corresponding ratio. Thus, in 1113 cases of simple diarrhœa the deaths were 6, or 0·538 per cent. In 49 cases of bilious purging without vomiting or cramps, there were no deaths, the number no doubt being too small to give such a result. In bilious purging, with vomiting and cramps, the cases were 43, and the deaths 3, or about 7 per cent.; of rice-water purging there were 280 cases, and 12 deaths, or about 4 per cent. The addition of other symptoms in this peculiar stage of the disease appears to be attended with a great increase of danger. Out of 108 cases, in which the serous character of the stools was accompanied by vomiting, there were no fewer than 42 deaths, or nearly 39 per cent., and the addition of cramps to the other symptoms, which occurred in 281 cases, raised the mortality to 149, or 53 per cent. Perhaps no clearer proof could be given of the unity of the disease and its progressive danger.

Even where the disease had gone on to Cholera, or where the premonitory symptoms had become so violent as to excite alarm, and thus induce the patient or his friends to send for medical aid, a ratio was found to exist between the *earliness* of such application and the result of the treatment. This must be a self-evident fact; but it may be stated that from data furnished by Dr. James M. Adams, it appears that, of those Cholera cases which were brought under treatment within six hours of the time of attack, the percentage of deaths was only about 21. Between six and twelve hours, the percentage rose to above 33. Between twelve and twenty-four hours, 45 per cent. died; and when a delay of more than twenty-four hours took place before application was made for medical aid, the deaths rose to above 62 per cent. These facts may explain to a certain extent the great mortality of Cholera; and while they afford a very strong argument for making some attempt to lay hold of the disease in its earliest stage, they prove that, for the purpose of *prevention*,

the parochial medical relief, as applied under ordinary circumstances, affords only a very partial and inefficient protection to the poor during an epidemic visitation.

I am aware that objections have been made against the doctrine that all the diarrhœa cases occurring during an epidemic of Cholera are necessarily a part of the disease, and fraught with danger if neglected. But if we find diarrhœa suddenly sweep over an entire city in the depth of winter, when the disease is usually very rare, and if it be accompanied by violent and fatal outbursts of Cholera, the question may fairly be asked, If this diarrhœa be not part of the epidemic, what is it, and by what broad marks can it be instantly distinguished? I have no hesitation in expressing my own opinion, that the diarrhœa is as much a part of an epidemic of Cholera as the margin of a destructive inundation is part of the flood. It is quite true that every case may not be attended with equal peril to life; but there is abundant evidence to prove that the ratio of danger is determined by the locality where the cases occur, or by the greater intensity of the epidemic influence over one portion of the affected area than over another, rather than by any apparent difference in the cases. Whatever variety of opinion there may be on these points, it is practically impossible to make any distinction, at least in districts affected by Cholera. Were it even the fact, which I am by no means disposed to admit, that there are pathological differences in the cases, these cannot be recognised for one instant as warranting our treating one class and neglecting to treat another. Pathological distinctions, to be of any practical importance in such cases, would require to be not only so very obvious that any medical man could detect them at a glance, and infallibly predict what attacks are dangerous and what might be safely left without treatment, but they must be sufficiently striking to guide the sufferers themselves to the formation of a sound judgment. There must be no mistake on this point, as it is a matter of immediate life and death; and yet, from the very nature of the case, anything like certainty must be impossible. If it be asserted that the diarrhœa which precedes Cholera cannot be arrested, such a proposition may be safely left without further notice till it is proved. It certainly receives no countenance whatever from statistical facts. That individual cases have occurred in which diarrhœa has passed into the rice-water purging state, and thence into fatal collapse, notwithstanding the most active treatment, is perfectly true; but it is at the same time true that the number of such instances has been very small indeed, while nearly the whole of the fatal epidemic cases have never been seen by a medical attendant until they were either in absolute collapse, or rapidly verging towards it.

If then, in those districts where Cholera has become localized, the various classes of cases must be practically considered as progressive stages of one fatal pestilence; and if experience has demonstrated that there is a constant ratio between the period at which the disease is brought under treatment, and the success of the means adopted, the conclusion must be self-evident, *that the whole force of the Medical preventive measures should be directed against the earlier stages of the disease.* The treatment of the epidemic *as a unity* has amply confirmed the truth and paramount importance of this deduction, as the following table will demonstrate:—

Stages in which Medical treatment was first applied.	Per centage of Deaths.	Per centage of Recoveries.
Diarrhœal	0·25	99·75
Choleraic	5·00	95·00
Cholera not collapsed . . .	29·22	70·78
Collapse not pulseless . . .	70·18	29·82
Collapse pulseless	86·10	13·90
Secondary collapse	97·00	3·00

The data for the above table extend to many thousand cases of the disease, occurring in Cholera localities, and the milder forms are not to be confounded with those which take place in the neighbourhood of, but not in, districts affected by Cholera.

2. *The arresting of Cholera by treatment in the premonitory stage.*—In order to lay hold of the disease in its early stage, two kinds of measures were recommended in the Notifications and Regulations of the General Board of Health. First, the opening of Dispensaries, and the issuing of suitable notices urging on the people the necessity of immediate attention to all disorders of the bowels; and secondly, the inspection of the population in affected districts, and the immediate treatment of all persons found suffering from premonitory symptoms.

The first of these has most frequently been carried out by itself; indeed, I know only of two cases in which Boards of Guardians have of their own accord adopted both measures. It has generally been presumed, that if the usual parochial medical relief were extended to meet the emergency, by the addition of a few Dispensaries, and if the people were fairly told where to apply for aid, the Board had discharged the whole duty incumbent upon it in this special matter. I have often experienced great difficulties in bringing Guardians to see the necessity of adopting any other medical preventive measure. The general feeling has been that to send a medical man to seek for cases of disease was going quite beyond the reasonable sphere of their arrangements, and in some cases the visitors were not appointed until the epidemic had done its work, and they were too late to be of any service. We can hardly imagine that the almost invincible obstinacy which has in some cases been displayed, in a matter of actual life and death, could have arisen from inhumanity. It is rather to be attributed to the fact, that the parties upon whom the Contagious Diseases Prevention Act had placed onerous and responsible duties in a time of pestilence, were not the most suitable to protect the people.

The results of the Dispensary system of relief, when pursued alone, have been the successful treatment of a large number of the simpler forms of diarrhœa, but a still larger class of cases escaped its operation altogether, and it was hence found that while those who had been treated at the Dispensaries were saved from the more serious attacks of the disease, the Cholera cases occurred in the great majority of instances amongst persons who had made no application in the diarrhœal stage, and were

first seen by the medical attendant in a state of collapse. It may be said that the parties who suffered were themselves to blame, in not having made application for the means at their disposal, but a very ample experience has convinced me that those who are in most danger are least likely to apply, because there is a state of the nervous system connected with a severe epidemic seizure, the tendency of which is to make the sufferer apathetic. The sentient nerves are dulled, and important constitutional changes take place without pain. The discharges which are sapping the very powers of life are permitted to go on, not only without check, but with a certain consent to the feelings of relief which are experienced. No alarm is taken till it is too late, and in not a few instances the relatives have been first aroused to a sense of danger by the last death-struggle of the patient; it has likewise happened that the medical visitor, in going his rounds to seek out cases of diarrhœa, has found the dead bodies of those for whom no medical aid had been sought or procured. Fifty-one such examples occurred in one parish in Glasgow alone. I know an instance of this fatal neglect which happened in the person of an eminent physician, who was particularly successful in the Cholera of 1831-32, because he directed his treatment against its early stages, and who, during the late epidemic, was fully alive to the absolute necessity of seeking out and treating the poor in their own houses; nevertheless, with his judgment perfectly convinced as to the danger of delay, and in spite of the urgent representations of professional friends, he permitted a slight attack of diarrhœa to progress unchecked, and did not think it even needful to go to bed, until sudden and fatal collapse put a period to his existence. A very striking case of the same kind is mentioned by Dr. Malcolm in his Report on the Cholera in Dundee. A system of medical inspection had been introduced into the factories in that town at the instance of the General Board of Health, and it became part of the duty of the mill overseers to warn the operatives to apply for advice immediately on being taken ill. Dr. Malcolm says that one of these overseers "suffered from diarrhœa for five or six days without asking any medical aid till it ended in cholera, though he was daily during the time he was ill with diarrhœa reporting to the medical attendant of the mill the cases of this disease that occurred among the mill-workers under his charge." This case also proved fatal. I mention these illustrations, because they afford conclusive proof to my own mind of the danger and inutility of trusting to the feelings of a patient as indicating the necessity for medical relief; indeed, it has not unfrequently happened that, while the poor who were under medical visitation were escaping with diarrhœa, their richer neighbours, left to themselves, were suffering from Cholera. Sad experience has proved that a time of pestilence is very generally a time of mental apathy; and even during the late epidemic people otherwise intelligent have been content to suffer because "all were dying." Under such circumstances the visitor, if he discharge his duty efficiently, becomes a messenger of mercy, to rouse the apathetic, to caution the vicious, to enlighten the ignorant, and to heal the sick. The *à priori* necessity for some more efficient method of staying the ravages of Cholera than the opening of Dispensaries, is thus founded on the very nature of the disease.

3. *House-to-house Visitation.*—There are two ways in which a

system of house-to-house visitation may be carried out,—the first by lay visitors, the second by medical men. The former plan was urged upon the Parochial Boards by the first Notification of the General Board of Health, but the advice appears never to have been followed, and the reason assigned was that it was either impossible to obtain the voluntary unpaid services of suitable persons, or, if an attempt at visiting were made, it was not followed up with regularity sufficient to make it effectual. A better result was obtained from the adoption of a paid lay agency, by which the cases were sought out and reported immediately to the medical officer of the district, who proceeded at once to visit and take charge of the patient. This was the plan adopted at Bridgeton, Glasgow, and under certain circumstances will be found useful, but wherever the epidemic exists in force, a staff of medical visitors is the only one that can be relied on. The sole objection to be urged against it is the difficulty of obtaining an adequate number of gentlemen to undertake a work so apparently extensive and dangerous, but this difficulty has never been a practical one, because, on a close examination of the manner in which towns are attacked by Cholera, it will be found, as stated elsewhere, that the disease in its virulent aspect is almost invariably confined to circumscribed localities. Even while Cholera prevailed in a greater or less degree over the vast area of the metropolis, I found that, with the exception of a few scattered cases, the great bulk of the mortality occurred within a very narrow compass in each district attacked. This was indeed the law observed by the epidemic; and, besides, it seldom lasted long at any one point, but attacked a number of points in succession.

The practical deduction from these peculiarities obviously is, that a very large staff of visitors is not required, as a small number can cover the affected localities, and it is in these, with few exceptions, that the really dangerous form of diarrhœa occurs. The great secret consists in so organizing and directing a small staff of visitors, that they may hunt out the disease wherever it is to be found, and this service requires to be performed with all the precision of a military movement.

The plan of organizing a town must necessarily depend upon its magnitude, and its local sanitary peculiarities. Where the population is small, it will in general be found sufficient to divide the town into such a number of districts as will enable the visitors appointed to make a thorough inspection of every affected locality, once or oftener in the course of the day, and possibly one medical superintendent would be sufficient to direct the operations of the visiting staff. In cities and towns where the inhabitants are numerous, and where several parishes are affected, the present state of the law points out a separate organization for each; and it has been customary to conduct the whole of the preventive measures of every parish or union independently, under one or more medical superintendents appointed by the guardians. In all cases in which a subdivision of the parish into districts for the ordinary purposes of medical relief was found to exist, it was deemed advisable to preserve such subdivisions for preventive purposes, as being already well known to the people. In some cases the usual medical officers of these districts, with a suitable number of qualified assistants, undertook not only the treatment of all cases of Cholera, but also the superintendence of the staff of visitors within the district. In others, however, it was found needful to separate entirely the medical visitation of houses from the ordinary treatment of Cholera, and to appoint special superintendents to direct the preventive measures.

Practically, it was found to be needful to organize such a machinery as appeared best adapted to cope with the local peculiarities of the epidemic, but I considered it always to be advisable to keep the visitors at their special work of prevention.

The method usually adopted for carrying out these views was as follows:—Immediately on arriving in an affected town I placed myself in communication with the local authorities, and proceeded to examine minutely into the nature of the epidemic cases and the sanitary defects of those houses and districts where they occurred. I next reported to the local authorities on all the steps of a preventive nature which required to be taken in conformity with the Regulations of the General Board of Health, and pointed out the special directions in which the regulations ought to be carried out to meet the existing emergencies. In a number of instances it was found to be needful to apply to the Board for special powers to do certain things which could not be done under the general regulations, as it was found to be very difficult to induce the local authorities to interpret the powers granted to them in a sense sufficiently broad to be of much use in saving human life. The special regulations generally pointed out all the details of the machinery required, even to the number of beds for the House of Refuge, and the number of visitors and additional medical aid to be procured. In order to save time, it was customary to proceed at once to organize the machinery, under a promise that the special regulations would be sent as soon as they could be prepared. In many cases medical aid had to be obtained from considerable distances.

The visiting staff was directed as follows:—

First,—the seat of the disease was determined.

Second,—a suitable number of visitors was despatched into the affected districts, with instructions to visit from house to house, once a day, or oftener, according to the violence of the attack, and to treat on the spot all persons found to be suffering from Cholera, or its premonitory symptoms. As it was necessary, however, that the time and energies of the visitors should be devoted as much as possible to arresting the disease by treating it in its earliest stage, they were required to hand over immediately to the ordinary medical attendant all cases of Cholera they might meet with.

Third,—Each visitor was supplied with a box containing appropriate remedies, such as calomel, opium, ether, essence of peppermint, &c.

Fourth,—He was directed to report without delay, all houses, streets, &c., which needed cleansing, and all nuisances requiring removal.

Fifth,—All the visitors met at a stated hour each day, and gave in to the superintendent a schedule containing the particulars necessary to enable him to form a judgment as to the course the disease was pursuing, in order that he might direct their operations.

Lastly,—The visitors and medical officers were required to use their influence in inducing the removal of families from infected houses to the houses of refuge, and patients to hospitals, and they also warned the people as to the absolute necessity of temperance and cleanliness, and of the danger of neglecting the slightest indications of the disease.

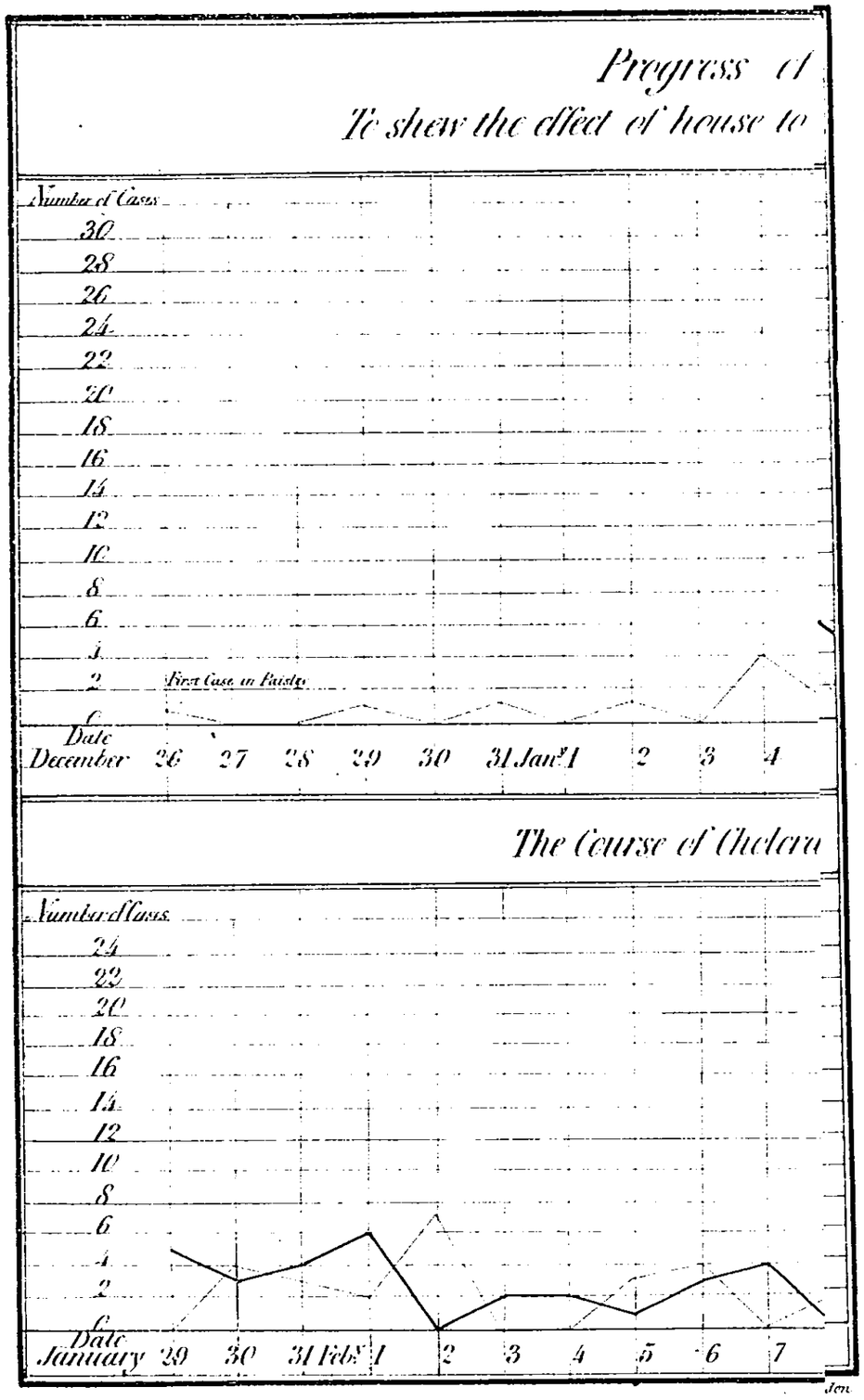
I usually drew up a Code of Instructions for the guidance of the superintendents and visitors, and also the schedules required for collecting information as to the progress of the epidemic.* Notices were printed and circulated among the people, giving them every information as to the means adopted for their protection, and requesting their co-operation.

Dumfries was the first town in which the preventive methods were fully tried. It was at first contemplated to attempt the visitation by a lay agency, but the state of public feeling in the town appeared to render the organization of such an agency a hopeless matter. I had previously made a house-to-house visitation in several of the affected parts of Edinburgh, and ascertained that visitation by a medical officer would be well received by the people; and considering the local character of the epidemic at Dumfries, and the universal prevalence of a marked premonitory stage, I deemed it to be my duty to recommend the adoption of this modification of the system, by "enjoining all medical officers to visit not only Cholera cases, but to make a house-to-house visitation throughout their respective districts, to carry with them medicines for immediate use, and to administer them on the spot to all persons affected by diarrhœa. The visitation to be made once a day at the least." This recommendation was dated the 7th of December, and it was accordingly made matter of order by the General Board of Health in its Special Regulations of the 9th December, 1848, and was carried out with a degree of success so remarkable, that it was subsequently applied to all cities and towns affected by Cholera.

I have elsewhere given special reports on a number of towns as illustrations of various kinds of organization adopted, and shall merely state generally the nature of the results which followed.

Some of the first returns made by the visitors stated that a number of dead bodies had been discovered within the preceding twenty-four hours, and that they had found a great many cases of Cholera in various stages of development, proceeding to a fatal termination, not only without medical aid, but without any apprehension of danger on the part of the sufferers or their friends. These were of course placed under immediate and active medical treatment, and the result was a rapid diminution in the proportional fatality of the disease. Were this the only result, it would of itself be sufficient to justify the entire machinery of medical inspection, but, in addition to the cases of developed Cholera brought under treatment, there were discovered a vast number of cases of diarrhœa and rice-water purging, in none of which had the patients applied to any dispensary. The cases last mentioned were found to be exceedingly amenable to treatment, as may be seen by the tables already given, and as many were doubtless arrested in their progress towards developed Cholera, we should naturally expect a marked diminution in the number of Cholera cases reported. We have here then two facts of paramount importance: first, a diminution of mortality; second, a diminution of attacks, and consequently a very striking change should be exhibited in the statistics of the disease. Such would inevitably be the case were it possible to place the entire population under strict superintendence, and were the attack of the

* Specimens of these are given in the Appendix, and in the Report on Glasgow.

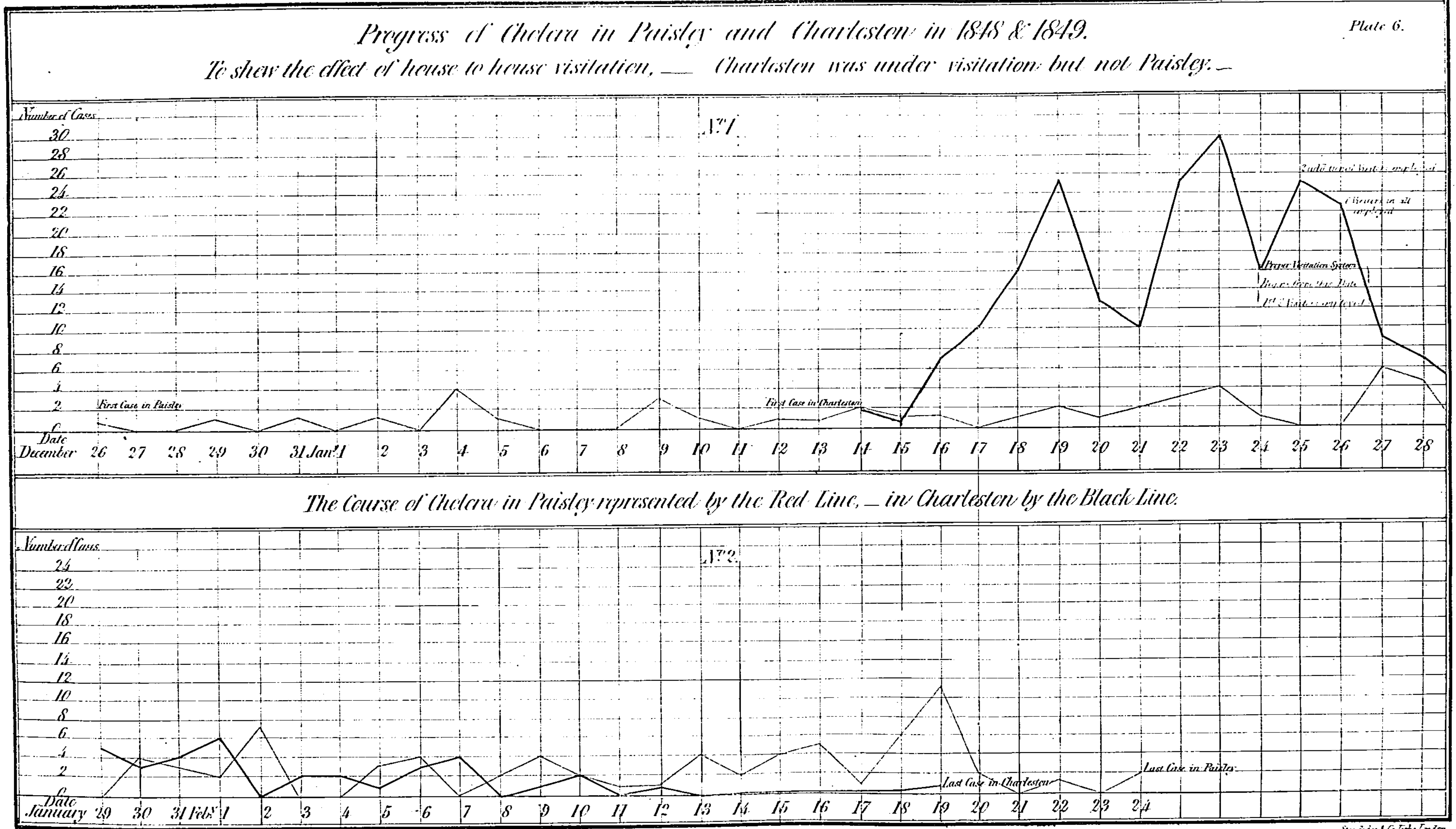


epidemic always a *single one*. The Regulations of the General Board of Health, however, were specially directed against the disease as it occurred amongst the *necessitous* classes. Persons in the receipt of wages and not requiring casual aid could not legally be made chargeable to the parochial authorities, any more than the richer portion of the population, although it was generally understood that the line of demarcation was not to be rigidly drawn, always keeping in view that the object was to save life.

Again, the disease usually attacks large cities as if they consisted of groups of villages, first one portion and then another being seized, and the disease following pretty much the same course in each instance; many of the first cases being sudden and fatal, and being succeeded by cases with marked premonitory symptoms. If the preventive measures even stopped all the cases in the early stage in one locality, still the cases resulting from the fresh seizure of another locality would be recorded in the daily schedules, so that a smaller apparent statistical effect would be produced than really was the case. The only fair experiment, therefore, would be to take a district where there was only *one* epidemic seizure, and where, as a general rule, the disease had a well-marked premonitory stage. If the population were a small one, and if an efficient preventive medical staff were placed over it, the full effect of the house-to-house visitation, with open dispensaries and extensively distributed notices, would then become immediately apparent. Several very striking illustrations of this have taken place in Scotland. The epidemic seizure of Dumfries was a *single* one, and the cases, almost without exception, had been preceded by neglected diarrhœa. The striking results of the preventive measures in this instance will be found detailed in the Report on Dumfries.

The town of Paisley furnished a similar illustration. The suburb of Charleston was placed under active medical visitation when Cholera amounted to twenty-three cases a day. Here also the first cases discovered were true Cholera, and all the premonitory cases had opalescent stools. The cure of the latter was attended by an immediate effect on the statistics of the disease, and on the fourth day of the *complete* visitation the Cholera had fallen from twenty-three cases a day to *three*, and the disease shortly afterwards disappeared. It is a striking fact, that, in two or three days after the first rice-water purging cases were discovered, they too declined in numbers, and gave place to cases of simple diarrhœa. This arose partly from the growing efficiency of the visitation, and partly from the people becoming better acquainted with its objects, and giving earlier information to the visitors. The whole daily number of premonitory cases discovered little more than counterbalanced the Cholera cases which had disappeared from the schedule, proving that the diarrhœa cases were all, or nearly all, true premonitory cases. In other districts of Paisley, where equally active measures were not adopted, the disease began earlier, and went on for a much longer period, than it did at Charleston. In this case also the medical officers concurred in stating that the subsidence of the disease was clearly connected with the discovery and treatment of the earlier cases.

The accompanying statistics (Table VIII. and Plate 6) exhibit in a striking manner the breaking up of the disease in Charleston by the



Progress of Cholera in Paisley and Charleston in 1848 & 1849.
Plate 6.
To shew the effect of house to house visitation, — Charleston was under visitation but not Paisley. —
Nº 1.
Number of Cases
30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0
First Case in Paisley
First Case in Charleston
Proper Visitation System
Date
December 26 27 28 29 30 31 Jan 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28
The Course of Cholera in Paisley represented by the Red Line, — in Charleston by the Black Line.
Nº 2.
Number of Cases
24 22 20 18 16 14 12 10 8 6 4 2 0
Last Case in Charleston
Last Case in Paisley
Date
January 29 30 31 Feb 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

visitation system, as contrasted with its course in other districts of the same town not under active medical visitation.

The first epidemic seizure of Inverness was limited to 20 cases of choleraic diarrhœa; I could not ascertain that another case had occurred. The first ten cases all proved fatal from not applying for aid sufficiently early. The last ten cases were brought immediately under treatment, and all recovered.

Most large cities would furnish similar illustrations, but I shall select one from the Barony parish, Glasgow. The Parkhead district of that parish is a circumscribed one, so that the population could be placed under comparatively strict inspection, and so efficiently were the measures carried out, that throughout the entire epidemic the premonitory cases amounted to no less than 2379 per cent. of the Cholera cases. On some days the premonitory cases were to those of developed Cholera in the proportion of 3000, 3300, 5900, and even 6000 per cent., and the result on the Cholera, as will be seen by referring to Table IV. and the diagram (plate 7), was the complete breaking up of the disease, leaving entire days during which all the cases appeared in the premonitory schedule only, to which it was indeed confined with a few exceptions during the whole month of February. The Report on Manchester gives similar facts.

Where the conditions have been favourable for the experiment, the results have been as stated; but it has happened in circumscribed districts where the sanitary conditions have been exceedingly defective, and where the attacks ran their course with great rapidity, that the visitation system has not produced such results as those now detailed, and for the obvious reason, that there was no marked premonitory stage against which it could be brought to bear. In these last instances, the entire dispersion of the people, provided it had been practicable, would have been the only safe course. If the defective sanitary conditions which are connected with rapid attacks cannot be removed from the people, the people must be removed from the cause. There is no other remedy.

In large cities, as has been already stated, the conditions for a full experiment do not exist. All that could be done was to use the visitation system to drag as many as possible out of the fatal grasp of the epidemic. Upon the whole then, though, from the nature of the case, the *exact amount* of good effected by the preventive methods adopted cannot be ascertained with precision in every instance, no mind open to the reception of evidence can doubt that much suffering was prevented and a large amount of human life preserved. There is abundant proof that an effect was produced on the whole statistics corresponding to that which was so strikingly apparent in all those cases where a proper groundwork for this kind of evidence existed. In the reports on the towns will be found the opinions of medical men who actually witnessed the practical results of the preventive measures, and these, along with the statistical evidence, are sufficient to settle the question as to their entire efficiency when zealously carried into operation.

SECTION IV.

SPECIAL REPORTS ON TOWNS.

I.—Report on the Preventive Measures adopted for the Relief of Cholera in Dumfries during the Epidemic of 1848-49.

I have elsewhere given an abstract of the causes which make Dumfries and Maxweltown liable to attacks of epidemic disease; some of these are peculiarly of a topical character, but all, so far as I can perceive, admit of removal. There were, however, certain very obvious localizing causes of cholera, which might have been removed before the epidemic began. These had all been pointed out in the published notifications of the General Board of Health, and in the circular of the Board of Supervision, but the efforts made to abate the evils alluded to were so partial that nothing really effectual had been done. While the disease was committing the most frightful ravages there were still numerous offensive middensteads and pigsties: a filthy state of the affected districts, and no houses had been cleansed or limewashed. The medical arrangements were most defective, there was no proper dispensary relief, no house of refuge, and the Parochial Board of Dumfries had broken up the system of medical relief they had previously sanctioned, and left the town to the mercy of the pestilence at a time when between 20 and 30 deaths a day were taking place out of a population of 10,000.

In consequence of several applications having been made to the General Board of Health, by persons in authority in the town, I was directed, by telegraph, to proceed from Glasgow to Dumfries. I did so immediately, and arrived on the afternoon of the 6th December, 1848. In the course of the evening I conferred with the authorities and the remaining medical officers, from whom I received information as to the condition of the town and the nature of the epidemic seizure, and ascertained that, while diarrhœa was almost universally prevalent, every case of cholera had been preceded by a distinct premonitory stage of some duration. I also met the Parochial Board, and requested that a messenger might be despatched to Glasgow and Edinburgh for more medical aid, which was done before the meeting broke up. Having only been a few hours in the town, the information I had received was necessarily incomplete, and next morning I resumed the inquiry. I very soon found that matters were in a much worse position than had been previously represented to me, and that it would be necessary to obtain special regulations to enforce the carrying out of specific measures to meet the existing emergency. The diarrhœa was spreading with frightful rapidity; the existing medical staff was entirely inadequate for the purposes of prevention which I contemplated, and was, moreover, beginning to suffer, and there appeared an absolute necessity for collecting a large additional number, and turning their whole energies to searching for and treating the disease in its premonitory stage. In the course of the day (the 7th) I drew up and despatched the neces-