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THE
SANITARY STATE OF BELFAST

BY

A. G. MALCOLM, M. D.

THE ROYAL SOCIETY OF HEALTH

Founded 1876

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THE
SANITARY STATE OF BELFAST,

WITH SUGGESTIONS FOR ITS IMPROVEMENT :

A PAPER

Read before the Statistical Section of the British Association,

AT BELFAST, SEPTEMBER 7, 1852.

BY A. G. MALCOLM, M.D.

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The Sanitary State of Belfast, with Suggestions for its Improvement. By A. G. Malcolm, M.D.

GENTLEMEN,

Having devoted earnest attention for several years past to the sanitary circumstances of this town, and having observed certain uniform results and conditions in its vital statistics connected with its physical state, I feel myself in a position to lay before the Section some points of interest thereon, which may not be generally known even to residents, and certainly not to the majority of the Members before whom I have the honour of appearing.

It is not my intention to enter at all into the origin and progress of the sanitary movement in these countries, or even to refer to the physiological basis upon which, as a science, vital statistics must ever rest. Such a course would only occupy your valuable time superfluously; as, thanks to the noble and unbought exertions of that increasing band of sanitary observers and philosophers—the devoted disciples of Hygeia—there is now little occasion, even in far less eminent circles than the present, to revert to the well-beaten path.

I shall, then, without further preface, proceed to lay down my views.

I. In the first place, I shall briefly detail the sanitary characteristics of Belfast; secondly, I shall attempt to show that the vital statistics of this town fully corroborate the sanitary laws already established; thirdly, I shall prove that the tendency to epidemic visitations and outbreaks, and the mortality in such, are here on the increase; and conclude with a few suggestions as to the objects most demanded to improve the public health of this town.

1. The borough of Belfast includes an area of about 640 acres. This, however, does not exactly indicate the limits of this locality, as of late years a very considerable number of additional buildings have been erected much beyond the present boundaries, so that what we may reasonably consider as *the town* of Belfast occupies an area of about two square miles. Its surface, in general low, is

naturally divisible into two parts—a north-western elevated, and a south-eastern level—the line of demarcation being easily recognised by a glance at the shaded map (No. 1.) The former portion is considerably the smaller, including but one-fourth of the total town area. The latter division is nearly level throughout—its inclination towards the docks being very inconsiderable, and a large portion being also under high-water mark. The elevated division leads by a gradual rise to the bold chain of hills which extend in a northerly direction towards Carrickfergus, and southerly towards Moira. The river Lagan, and gentle rising ground on its banks, form the eastern view. The crust upon which the greater part of the town is built is composed chiefly of stiff absorbent clay, and, at the southern extremity, shifting sand, which renders much of the surface unsuited for building purposes without previous piling. Deeper sections exhibiting alluvial gravel, sandstone, marl, limestone, and trap-rocks, form the chief geological features, which are particularly interesting.*

The meteorological † phenomena have very slightly varied during the last fifty years. Returns, at intervals of twenty-five years, in three successive periods, give the following results:—

	Bar.	Ther.	Rain Guage.
Average of 1st period of years, ending 1799	30·0 in.	55·0°	24·334 in.
Average of 2d ,,	1828 29·99 in.	53·15°	34·3544 in.
Average of 3d ,,	1847 30·0448 in.	54·90°	26,64689 in.

The climate is generally mild; and of late years the winter season has been unusually both short and temperate. Dampness is another characteristic, which is well attested by the fact that the average number of rainy days is upwards of 180 per annum. The proximity of the town to the sea and mountains on the one hand, and a large lake (Lough Neagh) on the other, would, *a priori*, induce us to expect considerable humidity.

THE DRAINAGE.

It will be surmised, from our statement on the general surface of the town, that the greater portion is unfavourably situated for efficient drainage—that most requisite and fundamental of all the sanitary requirements of any locality. At high tide, the sea-water passes up into the main sewers of all the level district of the town—as those of Victoria Street, High Street, North Street, and Great George's Street—to a very considerable distance. During low water, however, the fall is tolerably good, and a full and powerful stream may be observed at all the outlets of the

* For full particulars respecting the geology of this district, the reader is referred to Mr. James Bryce's work upon the subject, to be had of any of the booksellers.

† Recorded at the Linen Hall Library, Belfast.

sewers. The inconvenience and sanitary evils arising out of this condition are easily understood. Thus, for several hours before full tide, a large portion of the solid refuse, which would have been under other circumstances carried out in suspension, has time to deposit in all the main lines of conduits; and though, during the ebb, much of it is carried away, still much remains, and tends, sooner or later, to block up the branch sewers where there is the least current. Again, in very high tides, and especially if occurring simultaneously with much rain, the lowest parts of the level district become inundated, and the residents suffer directly and immediately in health and property, and long after from the humidity which remains. There are also various streams, which, rising in the neighbouring hills on the western frontier, eventually fall into the great sewer, or directly into the dock. On most of them proprietary obstructions have existed for a very long period, which, in the time of great rains, necessarily produce accumulations and inundations, and this too in some of the most elevated localities. (See Map No. 2.) One of the most injurious of these obstructions was the weir at the paper-mill dam on the course of the Blackstaff river. Within the last two years, however, it has been virtually removed, and the tide now rises and falls for a considerable distance along its course. This has been of marked benefit in preventing unusual accumulations; but this foul and open tortuous stream still, we regret to record, remains the receptacle of the refuse of upwards of 400 houses, besides factories and public institutions, where many hundreds congregate or reside. (See Map, No. 3.)

The above facts and observations pertain, it will be seen, chiefly to the state of the main drains, which, in other respects, and in the larger thoroughfares, may be considered satisfactory. The condition of the *branch* drainage is a no less important subject not necessarily dependent upon the proper construction and efficient action of the great sewers. In many thoroughfares it is wholly wanting, and, in a still greater number, decidedly imperfect. In 1847, the numbers thus indicated were respectively 81 and 153.

EXTERNAL VENTILATION.

The next important point in the sanitary state of the town is its means of external ventilation. A glance at the map (No. 4) will give a tolerably correct idea of the disposition of the streets in this respect. Our main streets, for width and regularity of outline, are proverbially a model; but we cannot say so for the myriad approaches to the poorer residences. Upwards of 1,800 houses, in courts, &c., are accessible only by a covered archway. Of these the majority have only *one* outlet, and, under these circumstances, it is impossible that any current could ven-

tilate such localities. Indeed, as regards the tenements of the poor, the tendency to crowd them into the smallest space is so great, that it would *seem* to be an understood law of nature that the indigent do not actually require as much fresh air as the wealthy. This idea is certainly strongly corroborated by the fact, that of a total of 579 streets, lanes, and courts, 331 of the residence-ways of the poorer classes are under twenty feet in breadth! It is gratifying to know, however, that for the future, and within the borough limits, this evil cannot be increased. By the local act of 1845, "it shall not be lawful to build any house in any court or alley which shall be narrower than twenty feet, and through which there shall not be an *open passage in each end* thereof at least twenty feet wide, and entirely open from the ground upwards," (sec. 120.) And it is also cheering to contemplate the effects of the opening up of new and wide streets through different parts of the densely populated localities, which has been recently accomplished by the Municipal authorities. (See Map, No. 5.) Thus, formerly, one of the very worst districts in point of sanitary requirements, through the instrumentality of this sweeping reform, no longer merits this opprobrious distinction. New lungs and new life have been created in the very heart of this locality, now known as Great Victoria Street; and where nought but vice, death, and poverty, held their fearful orgies, has risen, as if by enchantment, a splendid array of marts and emporia of trade and commerce. But, however wide and spacious our main streets may be, we must confess Belfast is sadly deficient in one of the most important requisites for the health and comfort of a *town* population—we mean public Parks and pleasure-grounds. We can point only to two squares of any magnitude which are used as promenades. Our beautiful Botanic Garden is not accessible to the masses of the community; and were it not for the excellence of our public roads, and the recent construction of an ornamental island in our harbour, for which we are indebted to the good taste and philanthropy of our Harbour Commissioners, the greater proportion of the class referred to would be altogether denied the use of free open-air recreation. The Queen's Island has, indeed, become a boon. Here, all have access to a really delightful promenade, where the sea-breeze may be inhaled, and the sea-bath enjoyed, with the utmost freedom.

WATER SUPPLY.

Fresh water is supplied to the inhabitants from several sources. 1. Since 1768, from the old Tuck-mill dam, or low-level springs, originating about two miles from the town, close to the banks of the Lagan. This supply enters the town by Donegall Pass, where a small reservoir has been long erected, and accommodates a large portion of the level district of the town. This

water, when filtered, is excellent, though hard. 2. A second source has been long provided by wells sunk in different parts of the town, but especially in the vicinity of Cromac Street. The water from this latter source has been at all times admired for its purity and agreeability, and even yet is largely used. 3. The third source was established in 1840. It consists of three large reservoirs, constructed on the high ground in the angle between the new Antrim Road and the Cavehill Railway, which receive the supplies of some small springs on the Cavehill, the overfall of a good stream or mill-race, the property of a neighbouring manufacturer, and used for driving machinery at several points in its course, and the surplus rainfall of the immediate neighbourhood. In the lowest level basin this water is very pure, and is softer than the other specimens. It supplies many public works in town, and a large section of the private residents. 4. A fourth source is the small streams which pass into our sewers, or directly into the docks, and which are used for the most part for the purposes of steam-machinery, 5. Rain-water is also sedulously collected by almost all families, for washing and other domestic purposes.

Notwithstanding the number and extent of the supply, comparatively few houses are supplied with pipe-water *on the premises*; since it appears from our returns that, out of 10,000 houses, above 7,000 are provided with water from the public fountains, (which are twenty-four in number,) pumps sunk by landlords, or the water-carts! And, even in the houses furnished with pipe-water, cisterns are required, and the supply is intermittent. In dry weather, the streets are watered by drafts from the docks, or one of the streams referred to—sources of such doubtful purity as cannot improve the condition of the atmosphere in our streets. The fire-engines are generally well supplied from the high-source reservoirs.

STREET-CLEANSING.

The removal of all vegetable and animal remains from the surface of our public ways is manifestly as important a sanitary procedure as the due efficiency of the public sewers. In this town, so far as the large thoroughfares are concerned, there is nothing to be desired; but, in the poorer localities, where the accumulation of offensive remains is greatest, we must confess there is a lamentable deficiency. This arises partly, indeed, from the imperfect construction of the streets, lanes, &c., which, in many cases, are only partially or entirely unpaved. In 1848, 180 thoroughfares were so circumstanced.

But, had the houses of the poor sufficient accommodation, this evil might vanish, or at least be greatly mitigated. How can it be otherwise, when upwards of 3,000 houses are without

yards of any description, and a much larger number of the poorer houses are deficient in still more necessary accommodation!

THE CONSTRUCTION OF SMALL HOUSES.

As a sign of improvement among the class of house-owners and builders, it is gratifying to state that of late years there is a decided step taken for the benefit of the poor resident. This change is partly spontaneous, arising insensibly out of a prevalence of more correct ideas touching landlord duties, and partly in consequence of the strict surveillance which the proper officers of our Municipal authorities exercise over the construction of tenements and the management of lodging-houses. The great majority of the poorer class of houses in this town consist of four rooms in two storeys. These are generally occupied by two families. Each room varies from seven to ten feet square, and from six to eight feet high in the lower storey—the same dimensions with a lower storey in the upper. Each room, though not always, contains one window, the *upper* sash of which is almost invariably, in the older houses, made immoveable. (See Diagram of Plans.) Such a house is manifestly insufficient to be the domicile of ten individuals; but we have known, and not unfrequently, so many as eighteen or even twenty persons sleeping within such limited apartments. The evil of over-crowding, indeed, became so great, especially in the case of the poorer class of lodging-houses, that the Municipal authorities, at the instigation of the Sanitary Committee, instituted a searching examination, about three years ago, into their condition, and, with the able aid of my friend and colleague, Surgeon Browne, one of the Officers of Health for the Parish, planned and established a set of stringent regulations, which, it is to be hoped, will prevent the repetition of any occurrences similar to those to which I have alluded.

THE GREAT WORKING ESTABLISHMENTS.

There are in this town 48 flax and cotton spinning and weaving factories, 53 bakeries, and 33 confectioneries, 14 large clothing-establishments, and 14 foundries, besides several large sewed muslin work-rooms. All of these establishments are characterised by having numbers (in many instances amounting to many hundreds) of young persons congregated for many hours daily in a limited space. In some, it is a great object to keep the rooms at a certain, and that a high temperature. It is plain that, unless the utmost precautions are taken to prevent the accumulation of respired, and therefore vitiated air, the greatest danger to health may be expected. It may not be recognised immediately, but it is freely acknowledged by all competent observers, that sooner or later a deterioration of the vital powers

ensues, and hurries the victims into phthisis, or the many forms of chronic cachexia. We may, however, safely state that, in the recently-erected establishments, the greatest pains have been taken to ensure free ventilation.

PUBLIC SCHOOLS.

The schools of Belfast, of all descriptions, number 79. Of these, 24 belong to the public class, adapted for the poorer inhabitants. Their sanitary condition was duly examined in 1849 by the Sanitary Committee, with the general result—that a very few of the whole number were in every respect suited for the purpose, and several were so very deficient, that the Committee could recommend nothing short of their entire abandonment. Among those examined were the National Board Schools, some of which, however, it is gratifying to remark, were in every respect satisfactory, and did great credit to their benevolent patrons, and the zeal and watchful care of their able Inspector, David L. Blakeley, Esq.

THE SLAUGHTER-HOUSES.

Little improvement has been effected in these places since a Report was submitted to the Town Council on their sanitary condition in 1848. Then, most were condemned as being totally unsuited for the purpose for which they were applied, and highly injurious to the public health. The recommendation, in the Report, of the erection of suitable buildings, after the model of the abattoirs of Paris, entirely *without* the inhabited portion of the Borough, has not as yet been acted on. The old establishments, however, are better kept than formerly.

THE BURYING-GROUNDS.

Public attention, especially in England, has been unmistakably aroused, within the last few years, on the subject of intramural burials. Not a single sound argument has been advanced in their favour. On the contrary, the press and the platform have issued truths respecting their slowly, but ever-acting detrimental results, which were almost intuitively felt to be such as soon as promulgated; and, accordingly, a special Act of Parliament for the Metropolis, prohibiting their construction in future, and regulating the existing ones, has been very lately passed. *Here*, we can at present say, we have no intramural graveyard; but, if the increase of building continues in similar ratio to that of the last five years, one burying-ground at least will be, *de facto*, within the town. We refer to what is called the Poor-House, or New Burying-Ground, which includes an area of two acres and two roods, and is preserved in very excellent order. The two others are of many years existence—viz., Friar's Bush, the Roman Catholic, and Shankhill, the Protestant Burying-ground. The

former is excessively crowded, and were it not far removed from the town, would certainly prove injurious to the public health of its immediate vicinity. Until lately, Shankhill ground was in a similar condition, but a considerable addition has been recently made.

THE SUBURBS.

The chief distinguishing mark of the character of the suburbs of the town, in which term I here include the district of Ballymacarrett, is the great want of systematic drainage. No doubt there is some kind of drainage, but it is mostly of a primeval character, signifying that the rain from the clouds and the sewage from the dwellings are at liberty to make their own intersections and channels, without any interference on the part of man. Considering that the population of the suburbs is about 10,000, or nearly one-tenth of the entire population, more attention to this matter might be expected. But the proprietors evidently stand in need of some of those sanitary regulations which at present are restricted to the Borough. The great number of open ditch-sewers, the vast extent of damp, undrained common, the repeated "running up" of cotters' and labourers' tenements without the previous construction of suitable sewers, are all circumstances that must at once attract the attention even of the most careless visiter of a large portion of our suburban district.

Such is a brief view of the sanitary peculiarities of Belfast. It will be seen that the most striking defects are in part owing to natural circumstances, which more than common exertion will alone enable the inhabitants to overcome or neutralise, part to restriction in legislative control, and part to the ruinous principle of "*laissez faire*"—that great obstacle to improvement in the most favoured localities.

II. I would now invite your attention to my second proposition—that the vital statistics of the town corroborate the sanitary laws already established.

It is calculated that the standard figure to which the mortality of all towns in the United Kingdom might be reduced, by proper sanitary measures, is one in fifty per annum. Our mortality is one in thirty-five. We lose, consequently, unnecessarily, between eight and nine hundred lives annually. Our infant mortality is absolutely excessive—the average age at death being as low as nine years. I do not say it is relatively so, as I have no grounds on which to rely for such an assertion. Certain it is that one-half of the living population are under twenty years; and hence we have a preponderating young population, which alone necessarily accounts for a large infantile mortality.

Fever may be said to be endemic in this town. The memory of the oldest inhabitant fails to refer to a time when it was represented merely by an isolated case. During the last thirty years it has attacked above 62,000 inhabitants, of whom nearly 6,000 perished. Next to Dublin, no town in Ireland, or the sister kingdoms, of similar character or dimensions, has been so severely visited. Thus, while the proportion of fever deaths in all Ireland to the total deaths is only 6 per cent., it is *here* 16·2 per cent. ; and while the proportion of deaths from zymotic diseases is 38 per cent. for all Ireland, *here* it is 47·1 per cent. So much for our general condition. But let us come to particular influences referable to our sanitary state.

In the year of the great epidemic, 1847, (see Map, No. 6) out of 3,119 houses examined, and which were found with areas totally deficient in sewerage, fever occurred in the ratio of 70 per cent.; while, in 4,090 houses *of the same description*, but situated in tolerably well-drained localities, the proportion was only 19 per cent.*

In the same year, the two districts which were characterised as the most close and densely populated, had the largest relative amount of mortality, thus showing the evil effects of deficient external ventilation.

In the case of localities characterised by accumulation of refuse, either untouched or very seldom disturbed, we find that, while out of 5,297 houses so circumstanced, 47 per cent. cases of fever were furnished, other localities, similar only in other respects, could only supply 20 per cent.; and when we take into account the state of house accommodation, it is observed that 45 per cent. of fever patients were resident in the ill-conditioned, while only 20 per cent. came from similar quarters otherwise circumstanced. Our experience of the fever of 1848 gives also corroborative results.

The 1,141 cases of fever which occurred during this year were located in 694 houses, situated as follows :—In first class streets, *none* ; in second class ditto, 22 ; in third class ditto, 81 ; and in lanes, courts, entries, alleys, rows, &c., 156—making a total of 259 localities. Their sanitary examination was as follows :—Of these 259, 202 were deficient in main drainage ; 73 entirely wanting ; 223 were deficient in branch drainage ; 135 entirely wanting ; 220 generally deficient in surface cleansing ; 163 always filthy, arising altogether from the want of rear accommodation ; and 148 distinguished for old and dilapidated tenements.

Our Hospital and Dispensary Registers supply some very important information on the sanitary evils of the *districts*. Thus,

* These figures are drawn up from the Dispensary Returns alone, and do not, therefore, include more than one-half of the fever cases in town.

if we take the Hospital district, we find that, in 1847, there were visited 1,103 cases of fever. Of these, 616 were supplied by only twelve streets; some of these places have been for a length of time notorious in our Hospital Registers, and all have exhibited a regularly increasing unhealthiness. Thus, one court (Drummond's), a very old spot, and containing 41 houses, sent to the Fever Hospital, during the ten years succeeding 1817, 18 cases; the next ten years, 21 cases; and the last ten years, ending December, 1847, 113 cases.* In like manner, another street (Old Lodge Road) has increased in its fever returns during the same period from 66 to 166 cases, Pinkerton's Row, from 48 to 295 cases, Walker's Lane, from 30 to 69 cases, and Alexander Street, from 28 to 115 cases. As this investigation is carried over a lengthened period, during which no additions were made to the number of houses in the old localities selected, the facts elicited must be deemed eminently decisive; for these localities were at the time mentioned, and indeed still are, noted for deficient drainage, want of house accommodation, and pure air without, and want of room and cleanliness within.

A similar result will be found on comparing two localities in this district, containing the same number and description of inhabitants, but in very different sanitary condition, and noting the health returns from each. Thus, let us compare 's Street and —— 's Rows. In the former, the proportion of accommodation is three rooms for every four inhabitants; 18 cases of severe illness, of which five were fever, occurred in the space of twelve months; five deaths occurred within the same period from pulmonary consumption; and 3 per cent. of the existing inhabitants were ill at time of visit.

—— 's group contains nearly the same number of inhabitants. We find here—1st, That the proportion of accommodation is three rooms for every nine inhabitants; 2d, That 77 cases of severe illness occurred during twelve months, of whom 61 were fever; 3d, That twenty-two deaths occurred, all caused by fever; and, 4th, That more than 13 per cent. of the existing inhabitants were ill at time of visit.

The contrast of health presented by these two localities is marked and striking, and at once evokes the question—Wherein lies this vast difference? It certainly shows that two places, inhabited by the same class of people, and situated upon the same rising ground, may exhibit the utmost disparity in the

* The numbers here given for the *last* ten years are much *below* the true figure, as they include only those cases which were sent to the Frederick Street Hospital, though there were two other Hospitals open at the same time; and, besides, there were many persons resident in those localities who were treated for fever at their own houses, of whom no account is preserved. These corrections apply equally to the other district statistics.

state of their public health. Well, then, let us examine into the cause or causes of this contrast. 1st, We find that the houses in’s Row have yards and other necessary refuse accommodation, of which ——’s group is entirely bereft ; 2d, That’s Row is supplied with abundance of water, almost at the very doors, while ——’s Rows, on the contrary, are but very scantily provided ; 3d, That’s houses have nearly three times as many rooms, in proportion to the inhabitants, as ——’s group ; 4th, That the cubic area of’s rooms is much greater than that of ——’s by 634 over 504, and the minimum size of the latter is only 392 cubic feet ; 5th, The ground floor of’s houses is flagged, and, consequently, likely to be dry, and more easily cleansed, while in ——’s Row it is invariably earthen, and necessarily damp and filthy ; 6th,’s Row is sewered, though, we admit, imperfectly, but ——’s group is perfectly destitute of any means for the removal of refuse, and accumulations are, consequently, under its very windows.

How far any of these causes may be pre-eminent in producing the great difference in the state of health of the two localities it would be difficult to say ; but it matters not for our present purpose whether one or other predominates, inasmuch as a proper sanitary condition of a locality includes equally a removal of them all. Again, in 1850, —— Street, with 80 houses, was compared with a group of 75 houses in the same district. The former, with its population of 480, yielded but one case of sickness in every 44 persons during the year ; in the other locality, numbering 450 persons, every seventh individual fell sick during the year. The latter are deficient in every sanitary point—all without yards, without house drainage, with earthen and damp floors ; whereas, —— Street, though very crowded, has proper yards, efficient drainage, tiled floors, and clean, tidy, interiors. But it were easy to extend such facts. I have tables prepared, (see Appendix,) based on observations in several other parts of this district, which all exhibit the same view, and to bring them forward would only occupy your time and patience unnecessarily. A few statistical facts from the returns of the other districts must therefore suffice. They will show that sanitary defects are not limited to any one quarter.

In Dock district, in the memorable 1847, there were 1,131 cases of fever visited—558 of these were supplied by 11 streets and lanes. With three exceptions, all of these places are becoming worse, and all were the seats of the cholera of 1832. (See Map, No. 7.) Smithfield district, the densest both in the crowding of houses and inhabitants, sent out 1,533 fever patients in the same year, one-half of whom resided in but ten streets ; all of these are quarters well known for sanitary defects. One of these, during

the ten years ending 1827, sent out 99 cases, 176 in the next decimal period, and 233 in the last ten years. Another has increased from 420 to 511, and a third from 169 to 393. Similar results are readily deducible from the tabulated returns (see Appendix) of certain portions of Shankhill, College, and Cromac districts, and all bear out the great sanitary law, that disease, and especially fever or epidemic disease, is indissolubly associated with defective drainage, defective ventilation, defective cleansing, defective supply of water, to which may be added deficient or adulterated diet.

III. My third proposition is, that the tendency to epidemic visitations and outbreaks is on the increase in this town, and that such are becoming *more fatal*.

It will have been seen that in many localities there is a tendency to generate fever cases in an increasing ratio in the progress of time. This is the fact, however difficult may be the solution. Though, doubtless, a combination of causes may be necessary to establish this almost fermentive process, yet I think a ready clue may be had in the reflection that animal poisons (such as we may suppose that of fever to be) seem only to be neutralised by dilution; and that hence, when, from increased crowding in any locality, by additional buildings or additional inmates, the influence becomes more and more concentrated, there may be naturally expected an augmentation in the victims of the malady.

Certain it is that, in several spots, the germs of fever have remained unmoved, nay, I might almost say, unmolested, for a period of thirty years. The rapid growth of cities, of which Belfast is a proud example, in the eyes of those who merely view the evidences of commercial and manufacturing prosperity, tends most materially to interfere with external ventilation, and hence to favour the germination and maturity of the animal poisons. When we consider that, little more than twenty years ago, we could boast of but a single flax-spinning factory, and that now upwards of forty tall chimneys spring from similar establishments, it is little wonder that we should find disease, and especially epidemic disease, on the increase. To give accommodation to the thousand operatives which the giant demand of an unusually prosperous manufacture created, strings of houses on the simplest plan were hurried up, generally without sufficient carefulness as to drainage, ventilation, house wants, or situation, and the more ancient and cheaper districts, though already sufficiently crowded, were resorted to by the unthinking artisan, in his desire to have a dwelling sufficiently near his employment. In several instances, however, it must be stated (and I feel happy in being able to do so) employers, with a due regard to the health and comfort of the labourer, have set an excellent example in

the manner of constructing tenements for the poor, which, without being more expensive, are in every respect incomparably superior to any of the similar erections of former days.

The above-mentioned circumstance may account, at least in part, for the facts about to be stated. From the Hospital Registers, I have constructed a table of fever cases treated at the Belfast Fever Hospital, during a period of thirty years, which will distinctly prove the increasing mortality of the disease, thus arguing either a deteriorated vitality on the part of the labouring community, or a more concentrated animal poison. Either explanation may be due to sanitary influence. It is here given.

Period of Five Years.	Cases.	Deaths.	Mortality per cent.
Ending March, 1823,	3,278	142	4.4
„ „ 1828,	2,478	145	5.7
„ „ 1833,	2,919	196	6.7
„ „ 1838,	6,794	742	10.9
„ „ 1843,	6,311	696	11.0
„ Dec. 1847,	10,585	1,112	10.5

And, if we examine carefully the times of the epidemic visitation, and the intervals between them, we shall see that these intervals are decidedly narrowing. Here is the second table :—

Epidemics.	Cases.	Deaths.	Intervals.
Fever of 1817-18 ... (24 months)	2706	118	...
„ of 1826-27 ... (11 months)	1527	81	8 years.
„ of 1831* (12 months)	1061	73	4 years.
„ of 1836-37-38 (20 months)	4669	530	5 years.
„ of 1839-41 ... (37 months)	3764	422	1 year.
„ of 1843-44 ... (17 months)	3961	252	1½ years.
„ of 1847-48* ... (15 months)	5137	680	2½ years.

These numbers only include the hospital cases. I think the comparison of the two attacks of Asiatic cholera which this town experienced will also corroborate my position. In the epidemic of 1832, there were recorded 2,647 cases, of whom 424 died, thus presenting a mortality of sixteen per cent—a ratio which, however, is too low, as many cases were of so mild a character that

* Asiatic Cholera broke out in 1832-33, and 1848-49.

they would not have been returned as cholera had they occurred in the last epidemic. The epidemic of 1849 gave a total of 2,057 cases, and a mortality of thirty-three per cent. Now, even making all allowance for mild cases in the former epidemic, the comparatively increased severity of the last remains an unshaken fact.

IV. I desire now to draw attention to the efforts that have been made, the obstacles encountered, and the objects which are requisite to improve, and permanently sustain when acquired, the public health of this town. We know and feel the evil—What is the remedy?

It has been only lately that any extensive sanitary improvements *by authority* have been attempted in this town. There were many causes to retard such operations here. The changes consequent upon the passing of the Municipal Reform Act absorbed the general attention; our authorities were restricted in legislative power; and the public mind had scarcely a conception of the importance of the subject. Prior to the local act of 1845, the only permanent board who could take cognisance of sanitary matters was the Officers of Health for the Parish, created by the act under Geo. III., in 1819. This act had here remained in abeyance since 1822, until the Sanitary Committee, in 1848, revived it, since which these officers have been regularly appointed annually at the Easter vestry. The small sum of Parish-rate placed at their disposal, however, and the limited extent of their powers, only enabled them to cleanse open ditches or drains, remove accumulations of manure, and prevent actual vagrancy—in short, only to touch the surface of sanitary evils. Additional powers were temporarily given by the passing of the Nuisance Removal Act of 1848, which, however, in Ireland at least, is now carried out, if at all, by the Poor-Law authorities. The local acts of 1845 and 1847 have given some sanitary powers to the Mayor and Town Council, which, though limited to the Borough, have proved in the highest degree beneficial, and comprise the removal of nuisances, the construction of drains, the inspection of lodging-houses, slaughter-houses, and the prevention of adulteration and unsoundness in meat, grain, poultry, fish, and other provisions, exposed for sale; and, in certain cases, the removal of houses, and the widening of old and formation of new streets. Some of these matters have been accomplished satisfactorily; but as there is no special Health Committee to superintend and devote themselves to sanitary objects, the intention of the act has not, as yet, been fully realised.

Voluntary efforts to arouse public attention in this town, on the subject of sanitary reform, were successfully made on two separate occasions. In 1845, the Society for the Amelioration of the

Condition of the Working Classes was formed amidst the greatest enthusiasm, under the auspices of A. Mulholland, Esq., J.P., then Mayor of the town, and, in 1847, realised the establishment of PUBLIC BATHS AND WASH-HOUSES—the first of the kind ever erected in Ireland. This institution, the first-fruits of the sanitary movement, has afforded to the community great facilities for the exercise of a most salutary recreation, and tends to encourage and foster improved tastes amongst the operative population ; and it is only to be regretted that, with its present crippled resources, it is impossible to afford so extensive benefits to the poorer class as, under Municipal authority, it assuredly would. We believe, however, that the feeling is very general amongst the rate-payers of the Borough, that the Town Council should exercise the authority vested in them, and assume the establishment for the interests of the town, and, so soon as practicable, erect others in suitable localities.

Later, and with the view of preparing the public mind for the more stringent application of sanitary regulations, rendered necessary by the advent of the fearful visitation of 1848-49, and also with the purpose of leavening the masses with reasons for their necessity, a SANITARY COMMITTEE was formed early in 1848. This body, though they especially devoted themselves to the important subject of the Asiatic Cholera, instituted a thorough inspection of the town, and in various ways addressed to the public the results, accompanied with much useful and practical information touching the preservation of the public health generally. Unfortunately, however, with the subsidence of the epidemic, so did the public interest abate, and the Committee were necessitated to close their labours early in 1850.

BUT, in order to comprehend aright what is demanded in our sanitary state, it is necessary to understand the nature of those *obstacles* which have impeded, and continue to mar, the efficient execution of remedial measures, whether voluntary or authoritative. To these, then, we shall first briefly refer:—

1st, The want of main drains contiguous to tenements. Many owners would be readily disposed to execute the important sanitary improvement of drainage, if sewers existed with which they could readily communicate branch drains ; but it frequently happens, especially in the suburbs, that these sewers are several hundred yards distant, and that the properties of several different owners intervene.

2d, When common ground, the property of several parties, becomes a nuisance, it is most difficult to have it abated by the ordinary legal channel ; and, accordingly, we find that this class of cases is seldom effectually improved.

3d, Nuisances situated on property *sub judice*, as, for ex-

ample, in the case of *Donegall v. Templemore*, or owned by very poor individuals, are with difficulty removable. In the first instance, there are no parties against whom to proceed; and, secondly, the poverty of the owners throws the burden of the expense upon the authorities.

4th, There is a vast number of decayed and small tenements occupied by indigent and careless tenants, which would require a special sanitary measure for their proper regulation. The ordinary powers only touch the surface of such cases, but leave intact the constant process of sanitary neglect, arising from the baneful habits of the inferior class of tenantry; and the little inducement which the landlord feels to improve so bad a description of property tends to perpetuate the evil. The incorrigible practice of overcrowding, too, in such localities, is calculated to prevent any permanent sanitary improvement, as proper ventilation is with difficulty introduced into old and dilapidated tenements.

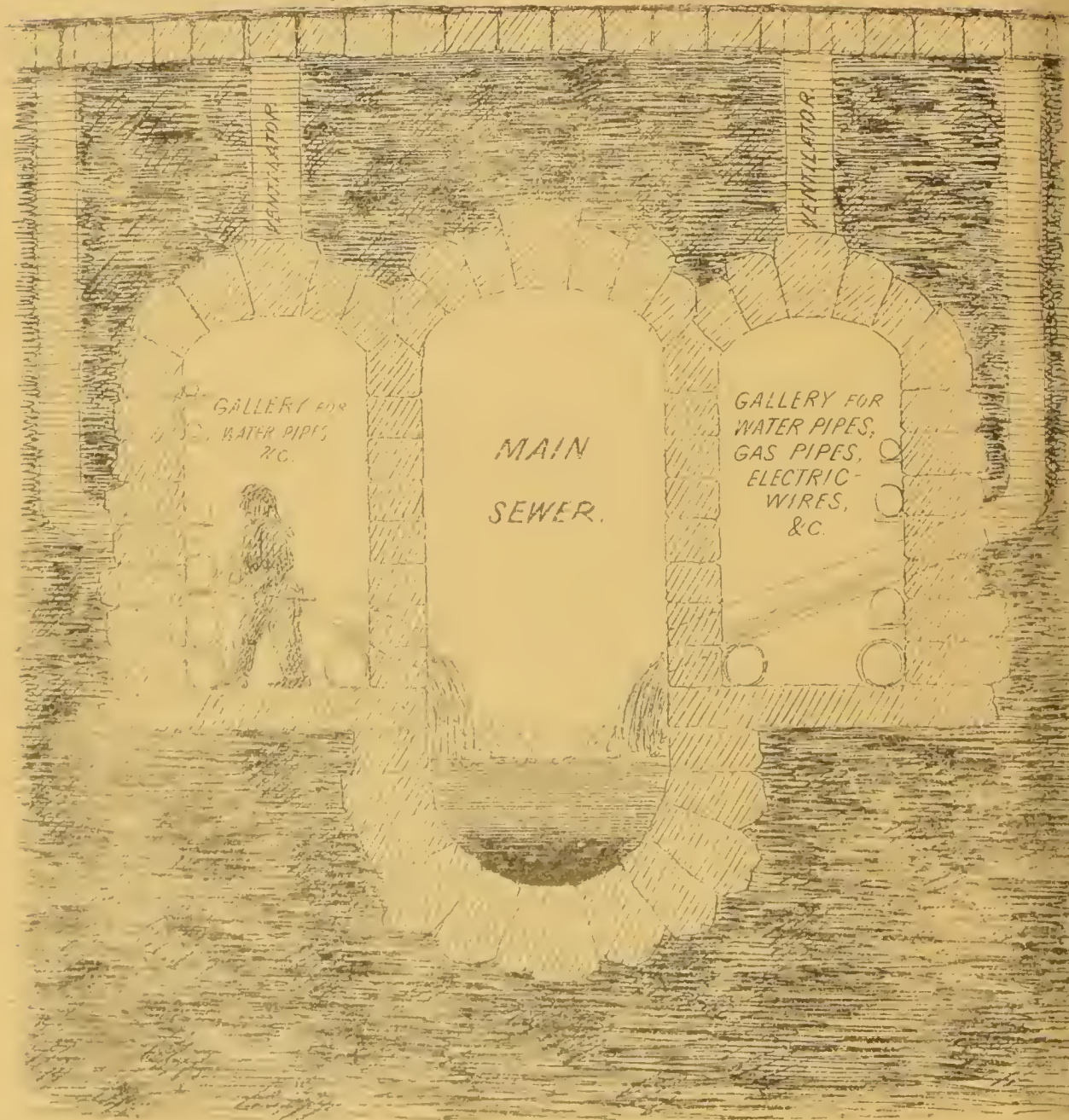
5th, We must, at the same time, observe, that ignorance, apathy, and carelessness are not confined to this class of people. We regret to assert that many among the wealthy and respectable ranks, though they do not deny the importance or utility of sanitary measures, give themselves little trouble about the matter, and shut their eyes to the results of deficiency or neglect, or ascribe such, when they do recognise them, to other than sanitary causes. This might be excusable in the case of the uneducated and the poor, but in the well-conditioned, and especially the house-owner, upon whom so many depend (unwittingly it may be, but not the less really) for sustenance, encouragement, health, and even life itself, it is a heavy responsibility.

In addition to the above, which may be deemed minor, though important, we meet with still graver obstacles in carrying on the work of sanitary reform. And, 1st, Our Acts are defective for the purpose of instituting any fundamental or leading and permanent sanitary improvement. For instance, in this town, the most extensive separate evil is the Blackstaff nuisance. Here, a large proximate and increasing population, a great property, and, indirectly, all Belfast are involved. Any permanent improvement of any part of this extensive locality cannot be attempted with propriety until this monster grievance be removed. But the cost of remedial measures deters from action; and the difficulties of a mutual settlement as to the amount of claims prevents anything being consummated, notwithstanding the recent enactment of an Act (1850) specially devoted to this object. 2d, The parts of the town beyond the Borough boundaries are not subject to any sanitary control. *Here*, there is no preventive regulation to protect the public health. *Here*, men of capital *may* plant tenements, or even small villages, in a swamp, without sewers, without regard to ventilation, or even the least recognition of sanitary principles, and all

SECTION
OF
IDEAL PLAN
Street Sewers & ^{OF} Subvial Galleries,

designed to prevent the present evil of opening-up the Streets for repairs, or laying down Gas and Water pipes, &c.

Surface of Street.



without any legal molestation. Such things have been done, at least to a partial extent, and may be yet seen; but at the same time we most cheerfully admit, as we have before remarked, that, in several instances, a judicious care has been exhibited by several house-proprietors in the suburbs for the promotion of the comfort of their tenantry. 3d, We yet want a *permanent* Borough-board to superintend and regulate all sanitary matters, and be in constant occupation. No half measures, no special body for particular purposes *on occasions*, or for a limited time, will suit our wants—but a recognised Executive, with adequate powers, is needed to protect the health-interests of the town. This once effected, and sufficient powers procured, all the difficulties referred to might be readily overcome; and we might attain, in a definite period, with the blessing of Providence, that salutary standard which belongs to the most favoured localities of the empire.

But, besides the possession of *new powers* to carry on with spirit and effect the sanitary work, there are many *desiderata* of great public and social importance, which attach to this, in common with all large cities. To these we can only allude in the briefest terms.

The sanitary requirements of a large city do not in reality differ from those pertaining to smaller communities, or even individuals.

1st, An abundant supply of pure, fresh AIR is absolutely needful for the preservation of the public health. This implies the necessity for perfect ventilation, drainage, and surface-cleansing. *Parks*, therefore, and public *squares*, for the purpose of permitting free currents of air to reach every house—the proper construction and effective compulsory repair of houses, with a view to effect internal ventilation and adequate protection—the most perfect system of arterial and branch drainage, for surface-water and sewage, with the view of removing, with the least possible delay, everything that can contaminate the atmosphere, and making it available for agricultural purposes—the due and regular inspection of all public buildings and establishments where people in large numbers temporarily assemble or reside—the prohibition of all intramural burials—the due and periodical inspection of all infected houses, and all premises connected therewith—the erection of *abattoirs* far apart from habitations—the strict supervision of all offensive trades and manufactures, and, when practicable, the prohibition of smoke from large furnaces—are all matters of absolute necessity to preserve the air in a condition fit for the due maintenance of life and health, and are, therefore, indispensable to a great city.

2dly, The proper discharge of the cutaneous functions naturally demands frequent ablution and frequent change of the under garments. In like manner, the proper discharge of the digestive and assimilative functions demands a diet and regimen suitable to the

condition of the individual. The means, therefore, of personal cleanliness—by an abundant supply of pure water for all, and by the establishment of a suitable number of free bathing and washing places for the poor, and the strict prohibition of adulteration in food or drink, by means of a system of competent inspection—are requisite for the wants of a great city.

3dly, And, above all, it is of the utmost importance that, in every town, and in every place of education, from the princely university down to the humblest grammar-school, the great principles of ANIMAL PHYSIOLOGY, upon which the whole fabric of sanitary reform is based, should be disseminated as an *ordinary* branch of mental culture, until the great maxim of the poet, “the proper study of mankind is man,” be everywhere appreciated.*

In fine, the Public Health Executive of a great city have a responsibility imposed upon them of the most momentous kind. The physical condition, and even lives of many thousands, are virtually dependent upon their untiring exertions. The sources of ever-recurring epidemic disease must be by them exposed and eradicated. They are bound to keep a watchful eye on every new foundation of a street or a building, lest it should interfere with due ventilation or drainage. Every sewer† should be regularly inspected, not merely on the surveyor’s plans, but as it actually exists, so that the poor inhabitant will be, equally with his rich neighbour, secured against foul accumulations. The surface-cleansing should be practised most of all in the most indigent quarters, and not, as we fear is too frequently the case, almost limited to the squares and streets of the wealthier rate-payers. To perfect drainage, as well as more directly the maintenance of the health of a town community, it is essentially necessary that our health authorities should exercise a most searching surveillance over the water supply. This must be excessive to be efficient. Periodically, every sewer, branch and main, should be swept out by enormous drafts of water poured in at its very origin. Care should also be taken that, before it reach the premises of any individual for domestic purposes, it should be tho-

* To this we may add, as an important auxiliary to the sanitary cause, an official registration of births and deaths, with the view of noting accurately the extent of population and mortality, the seats of disease, and, in many cases, its preventible causes.

† It would be of essential moment if the drainage of towns could be so effected as to accomplish these combined objects, viz. :—1st, To carry off rain water ; 2d, To remove liquid manure from every house to one public reservoir in the suburbs, or, better, some locality near the river, whence it could be forwarded to the agricultural districts ; 3d, To allow of the subvial passage of gas and water pipes, and electric wires, by the construction of galleries at each side of the main sewers, of sufficient dimensions that ready access at certain points might be had, for the purposes of repair or inspection, without having recourse, as at present, to the expensive and annoying plan of opening up the streets. (See Plan.)

roughly pure, and especially free from any suspicion of poison from lead or other deleterious mineral. The health executive should inquire into, and look narrowly after, all the public dietaries, as many epidemic evils have been traced to this source. Allied to this, and demanding their continual inspection, are all articles of food or drink exposed for sale. Restrictions to the sale of every form of poison, save for medical or manufacturing purposes, should be severely enforced by legal authority, as license in this respect becomes only an encouragement to crime.

Were the tone of public opinion sufficiently directed as to the paramount necessity of such a sanitary executive, our architects would not so often outrage the laws of health by devising the usual plans for our private and public buildings. We have doors and windows, indeed, but no air-flues, so that, were it not for a passage to carry off the smoke, many houses would be positively uninhabitable by night or in disagreeable weather. A single thought is scarcely expended on the means of ventilation, while the brain will be racked for weary nights to design some ornamental, or it may be eccentric, device for the exterior. Architects especially require this most necessary branch of education ; but we fear, as long as the public mind remains apathetic, little improvement can be expected. And, to come nearer headquarters, our Corporations and Town Councils are not so deeply imbued as they should be with the necessity of sanitary measures. Generally speaking, so long as they keep ordering paving or sewerage in localities only that can afford to pay the rate, they imagine they have fulfilled the duties entrusted to their charge. They cannot for a moment see in all its clearness that the sanitary provisions of the acts which they are appointed to carry out are of most vital moment in the *poorest* quarters, whence, indeed, most epidemic distempers spread to the best-conditioned residences ; but, on the contrary, seem to think that the larger and finer streets and squares are alone worthy of their attention. Thus it is that many towns have grown up from villages to considerable cities with the incubus of disease annually increasing.

It occasionally happens that the most obvious sanitary improvements are kept in abeyance, in consequence of legal difficulties in the transfer of properties. Were our laws as they should be, surely such a blot on our statute-book could not possibly occur. It is preposterous to think that health and life must bow before the weightier considerations of "the rights of property." Yet so it is ; and pity 'tis that such seems hitherto to have been the genius of the laws of Britain. No act should be permitted, under a wise Government, to interfere with the due efficacy of sound sanitary measures. The public good should make all minor interests, whether hereditarily entailed or recently purchased, succumb to its paramount importance.

Were the Government of the day more in the habit of consulting the medical profession of the country, many most lamentable expeditions would not have been attempted—many thousands of Britain's best sons would not have prematurely fallen victims to the stupidity or ignorance of the executive—and the public health, in all its manifold departments, would receive that meed of appreciation from the public at large which it most undoubtedly deserves, and must ultimately possess. State medicine and the public weal are inseparably associated, whether we admit it or not; and no Government can be said to do its duty well which does not practically recognise this great truth.

Of the sanitary armament above described, whereby disease is to be shorn of half its extent and malignity—whereby one of the greatest social revolutions that has ever been recorded in history is to be consummated—we need not particularise what the town of Belfast peculiarly requires, as it may be readily surmised by a little reflection on the preceding statements. Until, however, all these means be in harmonious operation, let it not be expected that all the bright anticipations of the sanitary reformer can be realised. The ignorant and careless thinker is at once attracted by the fascinating arcadian dream that flits before his enthusiastic mind, and he is led to expect the happiest and most extensive changes in society, within a very limited period, totally overlooking the important circumstance, that, to obtain the highest triumphs of the sanitary cause, is the result of combined prudence, forethought, knowledge, and zeal, gradually developed and matured in an entire people, and to be consummated only, it may be, after the lapse of centuries. Although, therefore, we of the present generation cannot expect to be witnesses of all these happy results of a new social economy, yet it is in our power to observe for ourselves, and, in a limited time, the good effects of sanitary regulation; and, moreover, we can all aid, if we have but the will, from the highest to the lowest, in bringing about the end desired.

At the present time this duty seems more especially incumbent. The dreaded visitant of 1831 and 1849 is again on his westward march, and ere a few months have passed may reach our shores. Are we prepared? We fear not. Almost all our sanitary associations in England and Ireland have ceased operations since the subsidence of the last epidemic inspired a fancied security; and we have no reason for supposing that the sudden burst of enthusiastic exertions then everywhere made has materially altered our sanitary position since. No; the sanitary cause, to be effectual for its object, must be continuously agitated; AND SANITARY OPERATIONS MUST NEVER STAND STILL, AS THE SOURCES OF SANITARY EVILS ARE UNCEASINGLY AT WORK.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, SECTION F.

JAMES HEYWOOD, Esq., M.P., F.R.S., IN THE CHAIR.

BELFAST, *7th September 1852.*

It was moved by PROFESSOR HANCOCK, seconded by Mr. RICKMAN, and resolved—

“That the Statistical Section of the British Association recommend the publication of Dr. Malcolm’s and Dr. M’Cormac’s valuable papers read this day; that a Subscription be entered into amongst the Members to aid in the expense of publication; and that the Council of the Belfast Social Inquiry Society be requested to take charge of the publication of these papers.”

In pursuance of the above resolution, a subscription was commenced by JAMES HEYWOOD, Esq., in which a number of Members of the Association and inhabitants of the town joined.

APPENDIX.

Sanitary Statistics of the Districts referred to at page 13.

DOCK DISTRICT.

The returns from this densely crowded district give 1,131 fever cases out of 4,241 cases of illness for the year. Of the fever cases, we find that 558, or one-half of the entire number, occurred in eleven streets and lanes, viz., Little York Street, Green Street, Talbot Street, Grattan Street, Chester Lane, Caxton Street, Lynas Lane, Great Patrick Street, Patterson's Place, Blakely's Lane, and Poplar Court. With the exception of Great Patrick Street, Patterson's Place, and Blakely's Lane, all these places are becoming worse. Fever cases in Little York Street have multiplied fourfold, Lynas Lane fivefold, Chester Lane tenfold, Grattan Street and Green Street steadily increasing. All of them were the seats of cholera.

The prevalence of disease in these particular localities, Dr. Black, the medical attendant of the district, ascribes to the following causes, viz., defective sewerage, too great crowding together of families, the existence of unregulated lodging-houses, where a vast number of individuals inhabit the same rooms, which are always ill-ventilated, indeed, it may be said, not ventilated at all, and more particularly the sleeping apartments, offal of various kinds allowed to be thrown into the streets, also, the accumulation of filth in the narrow back-yards (often only a few feet square) of the small number of houses that possess them, the very general absence of proper accommodation in the mere, damp earthen floors, neglect of personal cleanliness, both in dress and person. To the above causes may be added the great dearth of food which prevailed, with the consequent mental and physical depression.

SMITHFIELD DISTRICT.

This is, perhaps, the densest district, both in the crowding of houses and inhabitants. The number of district patients for the year amounted to 4,869, of whom 1,533 laboured under fever. Of the latter number, we find that 766, or one-half, resided in but ten places in the district, viz., Carriek Hill, Kent Street, Millfield, Hudson's Entry, Birch Street, Marquis Street, Stephen Street, Berryhill Court, Bell's Lane, and Smithfield. As in the other districts, we find here, also, a steady increase of unhealthiness. Thus, while, during the ten years ending 1827, Hudson's Entry sent out 99 cases of fever to the Hospital, during the ten years ending 1837, this number was increased to 176, and since that period it

has ranged at 233. In like manner, in Carriek Hill, the number has increased from 420 to 511, and in Millfield from 169 to 393. It need scarcely be said that cholera paid a visit to all these places. As the most probable causes of this unusual account of disease here, the medical attendant of this district enumerates the following :—Destitution, influx of strangers, overerowing, want of internal ventilation, accumulation of nuisances, and insufficient scavengering, deficient sewerage, the existenco of narrow lanes and close courts, and, finally, want of personal cleanliness and of proper supply of water.

SHANKHILL DISTRICT.

In this district the number of district patients for the year amounted to 4,255, of whom 918 had fever. Of this number 455 were residents of 10 streets, courts, and entrys, viz., Brown Street, Abbey Street, Peter's Hill, Brown's Square, Tanner's Court, Shankhill, Gardner Street, Galway's Entry, Bower's Hill, and Mitchell Street. It might be considered that, from its elevated position and suburban character, this district would be free from unusual disease ; but we see this is very far from being the case. Natural advantages are not always taken advantage of ; and when we state that the sewerage is most deficient, and that accumulations of manure are seldom heeded, the sources of impure air and consequent disease will be no longer difficult to discover ; and that this locality, like the others, is not improving, will be manifest from the following facts—that in Abbey Street, a small street of 40 houses, the fever cases have increased from 59 to 200, in Brown's Square, containing 46 houses, the increase has been from 120 to 190, and in Peter's Hill, from 109 to 233. As in the other districts, the victims of cholera were selected from all these places.

COLLEGE DISTRICT.

This district is likewise suburban. Its district patients for the year amounted to 3,987—962 of these had fever. One-half of the fever cases were of the following 10 places, in this locality, viz., Lettuce Hill, Durham Street, Sandy Row, Fox's Row, Francis Lane, Institution Place, Charles Street South, Pound Lane, Pound Street, and Hamill Street. From the statements made in an early part of this Report respecting this locality, it would be unnecessary to refer more particularly to the manifest sources of disease here. Cholera, delighting in low and marshy districts, did not neglect to sojourn here. Every year is adding to its number of fever victims. In the Main Street alone, it has risen from 205 to 755, in Barrack Street, from 78 to 277, and in Lettuce Hill, from 88 to 102.

CROMAC DISTRICT.

This remaining district is much more scattered than any of the foregoing, yet, from its want of proper drainage, and the generally filthy state of its smaller areas, its quantum of disease is by no means smaller. During the year, the fever cases amounted to 896, out of a total 3,227. 457, or more than one-half, of the fever cases occurred in 11 streets and lanes, viz., Market Street, Forest Lane, Stanfield Street, Verner Street, Bond Street, Lagan Street, Weigh-house Lane, Cromac Street, David's Lane, Back Lane, and M'Cauley Street, all of which,

except those streets recently constructed, were visited by the cholera. Some of these are rapidly deteriorating ; thus, in Market Street, the fever cases sent to Hospital have increased from 10 to 78, in Forest Lane, from 41 to 120, and in Weigh-house Lane, from 20 to 35; and for this state of things the medical attendant considers the most apparent causes to consist in the existence of damp, filthy, and ill-ventilated dwellings, and the want of personal and domestic cleanliness.

Extract from the Sanitary Committee's Report, 1849.

DOCK DISTRICT.—The filthy, flooded, and neglected state of Fleet Street and Tomb Street, and adjoining area, the flooded yards of Little Ship Street, the filthy and dilapidated condition of Higgin's Court (off Grattan Street), and the general bad state of the yards and buildings of Henry Square, pressingly claim our attention.

HOSPITAL DISTRICT presents us with several open drains of semi-liquid filth at the Antrim Turnpike and M'Farlan's Court (off New Lodge Road), foul, open grounds at Hardinge Street and south of Henry Street, and the filthy state of Valentine Street, North Hill Street, Union Place, part of Moffat Street, and the whole locality of Grove Street.

In **SHANKHILL DISTRICT** we meet with open drains at Shankhill Road, at east of M'Tier Street, at Hobson's Row, and at south of Old Lodge Road, foul, open commons in the locality of Gardiner Street and Mitchell Street, the filthy areas of Sackville Street and Lewis's Court, and a large stagnant pool at the rear of Brown's Square.

COLLEGE DISTRICT is full of open drains and filthy areas—the former at Napier's Row, Botanic Road, rear of Sandy Row, William's Place, Charles Street South, Brunswick Street, the rear of Victoria Place, and Mill Lane Court—the latter in the localities of Institution Place, Emerson's Entry, Cullingtree Road, and Falls Court.

In **SMITHFIELD DISTRICT**, in addition to the peculiar density of the population to the space occupied which characterises this district, we notice the localities of Gregg's Row, Law's Lane, Upper Kent Street, Bell's Lane, Fulton's Court (off Hercules Street), and Lenon's Court (off Smithfield), as being especially victimised by sanitary neglect.

CROMAC DISTRICT is of great extent, and contains comparatively few of the poorer classes ; and it is well that it is so, for its sanitary condition is by no means sufficiently attended to. The areas of Welsh Street, Staunton Street, River Street, Friendly Street, and Howard Street South, are greatly neglected, while large cesspools and open drains may be seen in the localities of Annette Street, south of Alfred Street, north and east of Verner Street, east of Staunton Street, and north of Friendly Street.

BALLYMACARRETT.—To this locality, which is included in the Borough, the Committee on several occasions directed special attention. They had it thoroughly inspected, and a more neglected portion of the town cannot be well conceived. Its general sanitary position on its first examination may be thus in brief described.

An almost complete want of drainage, extensive accumulations of liquid manure here and there immediately in the rear of dwelling-houses, and a general absence of house accommodations, are its chief characteristics. The only regular main sewer, extending from the Hollywood Road past the Vitriol-Works, and entering the Queen's Quay, though good, effects little improvement in the absence of branch drains. This state of matters the Committee took various means of impressing upon the inhabitants, and they are gratified at being enabled to record a growing spirit of improvement among the more influential of this quarter.

THE SUBURBS.—The Committee cannot report more favourably on the sanitary state of the scattered dwelling-places in the outskirts of the town. The evils alluded to in the Sanitary Report of last year have been rendered only more manifest by the experience of the past twelve months. The absence of Borough superintendence was particularly felt of late on the outbreak of cholera, which seized upon several localities in the extra-boundaries with a virulence which too well told of the many endemic causes in operation in these neglected quarters. Among the chief nuisances and places calling for sanitary surveillance, the Committee would here merely notice the following :—In the Southern Boundary, open drains and ill-conditioned tenements in the vicinity of the Blackstaff. In the Eastern, a general want of drainage in the vicinity of the Gas-Works. In the Western, deficient drainage south of the Falls Road, open drains at Shankhill and Old Lodge Road. And, in the Northern, open ditches, cesspools, and ill-conditioned houses, in the immediate neighbourhood of the Antrim Road.

TABLE I.—(SEE PAGES 5 & 11.)

Return from the Belfast Dispensary Report, for the year 1849, of all Cases of Diseases and Deaths in the different Districts,

SHOWING THE INFLUENCE OF THE BLACKSTAFF NUISANCE.

Hospital District,	3,108	Cases,	62	Deaths,	or 1·9 per cent.
Shankhill ,,	3,302	,,	80	,,	2·4 ,,
Doek ,,	2,612	,,	67	,,	2·5 ,,
Smithfield ,,	3,143	,,	84	,,	2·6 ,,
Cromac ,,	2,327	,,	89	,,	3·8 ,,
College ,,	3,198	,,	127	,,	3·9 ,,

Return of the Mortality in the months of June, July, and August, 1849, from all cases in the Belfast Dispensary District.

Shankhill District,	1	Death in 59	Cases,	or 2·0 per cent.
Hospital ,,	1	,,	39	,, 2·6 ,,
Smithfield ,,	1	,,	23	,, 3·0 ,,
Doek ,,	1	,,	29	,, 3·4 ,,
College ,,	1	,,	21	,, 5·0 (nearly.)
Cromac ,,	1	,,	12	,, 7·5 per cent.

NOTE.—About one-half of the total Cholera cases occurred in these 3 months.

Return of Mortality from Cholera in the Belfast Dispensary Districts generally, and in Cromac District, 1849.

Cases in all the Districts,	2,232	: Deaths,	702,	or 33 per cent.
Cases in Cromac District,	445	: ,,	191,	or 43 ,,

TABLE II.—(SEE PAGES 5 & 11.)
 GENERAL DISPENSARY RETURNS OF ASIATIC CHOLERA IN 1849,
 SHOWING THE INFLUENCE OF THE BLACKSTAFF NUISANCE.

DISTRICTS.	NO. OF CASES.
SMITHFIELD, ~~~~~	458, or 1 to 6·1 of All Diseases.
SHANKHILL, ~~~~~	425, or 1 to 7·1 of Do.
COLLEGE, ~~~~~	410, or 1 to 7·1 of Do.
CROMAC, ~~~~~	357, or 1 to 6·0 of Do.
HOSPITAL, ~~~~~	225, or 1 to 13·2 of Do.
DOCK, ~~~~~	182, or 1 to 14·0 of Do.

ORDER OF SEVERITY.

- | | |
|----------------|---------------|
| 1. CROMAC. | 4. SHANKHILL. |
| 2. SMITHFIELD. | 5. HOSPITAL. |
| 3. COLLEGE. | 6. DOCK. |

TABLE III.—(SEE PAGE 13.)
 LOTS OF DWELLINGS IN DIFFERENT DISTRICTS COMPARED.
 (These Lots were occupied by a similar description of Inhabitants.)

DISTRICT.	Name of Street.	No. of Houses.	No. of Inmates.	No. of Cases of Sickness in 1 Year.
COLLEGE.	Tea Lane ~~~~~	60	360	39
	Scott's Rows ~~~~~	30		
	Wesley Place ~~~~~	16	408	20
	Albert Court ~~~~~	12		
CROMAC.	Market Street ~~~~~	80	480	54
	Annette Street ~~~~~	32		
	East Street ~~~~~	30	474	14
	Friendly Street ~~~~~	37		
SHANKHILL.	Gardner Street ~~~~~	65	390	44
	Boyd's Street and Court ~~~~~	72		
HOSPITAL.	Sussex Street ~~~~~	80	480	11
	Hunter's Row ~~~~~	30		
	Pinkerton's B. Row ~~~~~	17	450	60
	Gutter Alley ~~~~~	12		
	M'Farlan's Court ~~~~~	16		
DOCK.	Clark's Lane ~~~~~	26	312	23
	Corr's Lane ~~~~~	26		
	Caroline Street ~~~~~	26	300	7
	Little Henry Street ~~~~~	24		

TABLE IV.—(SEE PAGE 12.)

SHOWING

THE SANITARY STATE

OF

THE NEW LODGE ROAD LOCALITY.

Places.	Reference to Plan.	General State of Tenements.	Cubic Feet in		Cubic Feet in Bed Room		No. of Families in each House.	No. of Individuals in each House.
			Kitchen	Back Room.	1	2		
Turnpike Street ~~~~~	8	Passable ~~~~~	520	---	560	---	1	7
~~~~~	---	~~~~~	800	784	693	702	2	10
~~~~~	---	~~~~~	800	784	700	686	2	8
New Lodge Road Street ~~~~~	---	~~~~~	608	720	570	644	2	9
~~~~~	---	~~~~~	630	672	882	882	2	10
~~~~~	---	Out of Repair	870	---	870	---	1	7
~~~~~	---	~~~~~	756	868	756	720	2	9
~~~~~	---	~~~~~	792	154	847	---	2	8
Lepper's Row ~~~~~	---	Good ~~~~~	654	504	770	607	2	10
Cuddy's Row ~~~~~	---	Indifferent ~~~	770	644	858	798	2	7
Hardinge Street ~~~~~	---	New Houses ~~~	1200	200	1200	---	1	6
Thompson's Row ~~~~~	---	Out of Repair	336	314	540	---	2	7
M'Robert's Row ~~~~~	---	Passable ~~~~~	770	---	770	---	1	6
Hunter's Upper Row ~~~	---	Out of Repair	392	616	392	616	2	12
" Lower Row ~~~	---	~~~~~	420	616	392	616	2	10
Patterson's Row ~~~~~	---	~~~~~	648	---	540	---	1	7
Gutter Alley ~~~~~	---	~~~~~	660	---	660	---	1	10
Pinkerton's Place ~~~~~	---	~~~~~	640	---	540	---	1	7
~~~~~	---	Neglected ~~~	640	---	510	---	---	---
~~~~~	---	Out of Repair	524	461	400	---	1	7
~~~~~	---	~~~~~	324	---	270	---	1	7
~~~~~	---	New Houses ~~~	544	336	440	504	1	7
~~~~~	---	Out of Repair	665	---	858	---	2	7
Thompson's Square Ct. ~~~	---	~~~~~	459	---	324	---	1	5
"    Narrow Ct. ~~~	---	~~~~~	650	---	800	---	1	4
M'Farlan's Court ~~~~~	---	~~~~~	539	462	182	---	1	8
Patterson's Court ~~~~~	---	~~~~~	648	---	540	---	1	7
Mooney's Court ~~~~~	---	~~~~~	693	---	394	---	1	7
M'Namara's Court ~~~~~	---	~~~~~	448	---	560	---	1	7
~~~~~	---	~~~~~	228	---	256	---	1	5
~~~~~	---	~~~~~	495	---	539	308	1	7
~~~~~	---	~~~~~	970	---	770	440	1	8

TABLE V.—(SEE PAGE 12.)

Showing the Sanitary Condition of the New Lodge Road Locality.

PLACES.	Houses.	Rooms.	Windows.	Floors.	Yards.	Privies.	Height of Storeys.		Sleeping Space to each Individual, in cubic feet.	
							1st.	2d.		
Turnpike Street ~~~~~	10	38	39	E.	0	0	6½	8	5·7	80
Thompson's Row ~~~~~	4	12	8	E.	0	0	6	5		122
Thompson's Square ~~~~~	8	16	16	E.	0	0	6	5		65
~~~~~ Narrow Ct.	12	24	24	E.	0	0	6½	8		200
M'Robert's Lane ~~~~~	5	10	10	E.	0	0	7	7		128
Lepper's Row ~~~~~	38	152	152	Fl.	Yes.	Yes.	7	7		111
Cuddy's Row ~~~~~	7	28	28	E.	0	0	7	6½		206
M'Farlan's Court ~~~~~	12	36	36	E.	0	0	7	4		80
Pinkerton's Pl., E. & N.	23	48	48	E.	0	0	6·8½	5·6		61
~~~~~ S. ~~~~~	15	60	60	Fl.	Yes.	Yes.	8	8		163
Gutter Alley ~~~~~	9	18	18	E.	0	0	6	6		66
M'Namara's Court ~~~~~	20	55	54	E.B.	0	0	6·7	4·7		101
Mooney's Court ~~~~~	7	14	14	E.	0	0	7	7		56
Patterson's Row ~~~~~	7	14	14	E.	0	0	6	5		77
Hardinge Street ~~~~~	32	96	96	Fl.	Yes.	Yes.	8	8		280
Hunter's Group ~~~~~	18	36	72	E.	0	0	7	7·8		112
New Lodge Road ~~~~~	67	241	220	E.B.	0	0	7·8	6·7		147

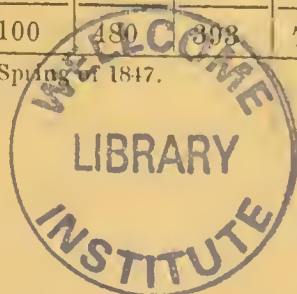
EXPLANATION.—E. Earthen; Fl. Flagged; B. Boarded; 0. None.

TABLE VI.—(SEE PAGE 12.)

Showing the Vital Statistics of the New Lodge Road Locality.

PLACES.	No. of Inhabitants.	No. of Existing Cases of Illness.*	No. of Cases of Illness in last twelve Months.	No. of Fever Cases.	Causes of Death.			Total Deaths in One Year.
					Fever.	Consumption.	Bowel Complaint.	
Turnpike Street ~~~~~	87	---	14	8	2	2	---	4
Thompson's Row ~~~~~	27	---	12	5	5	---	---	5
~~~~~ Square ~~~~~	29	6	11	11	2	---	---	2
~~~~~ Narrow Ct.	41	2	13	6	2	---	---	2
M'Robert's Lane ~~~~~	53	---	1	---	---	1	---	1
Lepper's Row ~~~~~	209	6	18	5	---	5	---	5
Cuddy's Row ~~~~~	99	2	4	1	1	1	---	2
M'Farlan's Court ~~~~~	87	2	8	7	2	---	1	3
Mathewson's Court ~~~~~	43	13	14	14	2	---	---	2
Pinkerton's Pl., E. & N.	136	30	51	48	11	---	2	13
~~~~~ S. ~~~~~	137	3	15	9	2	---	---	2
Gutter Alley ~~~~~	174	13	32	26	5	---	---	5
M'Namara's Court ~~~~~	180	24	87	82	15	1	2	18
Mooney's Court ~~~~~	37	4	8	4	1	3	---	4
Patterson's Row ~~~~~	31	3	4	3	---	1	---	1
Hardinge Street ~~~~~	153	8	16	13	2	---	---	2
Hunter's Group ~~~~~	194	26	77	61	22	---	---	22
New Lodge Road ~~~~~	581	48	95	90	14	2	1	17
TOTAL ~~~~~	2298	100	480	398	78	16	6	110

* Spring of 1847.





NORTH.

PLAN OF BELFAST. ELEVATED GROUND. BLUE.



HOSPITAL.

NEW BARRACK

DOCK.

SMITHFIELD

SPANKHILL

HIGH STREET

CROMAC

COLLEGE

RIVER LAGAN.

QUEEN'S CHANNEL

SOUTH.









NORTH.  
PLAN OF BELFAST. THE BLACKSTAFF NAVY CANAL (BLUE.)



SOUTH.

HILL SMITH, 17th, BELFAST



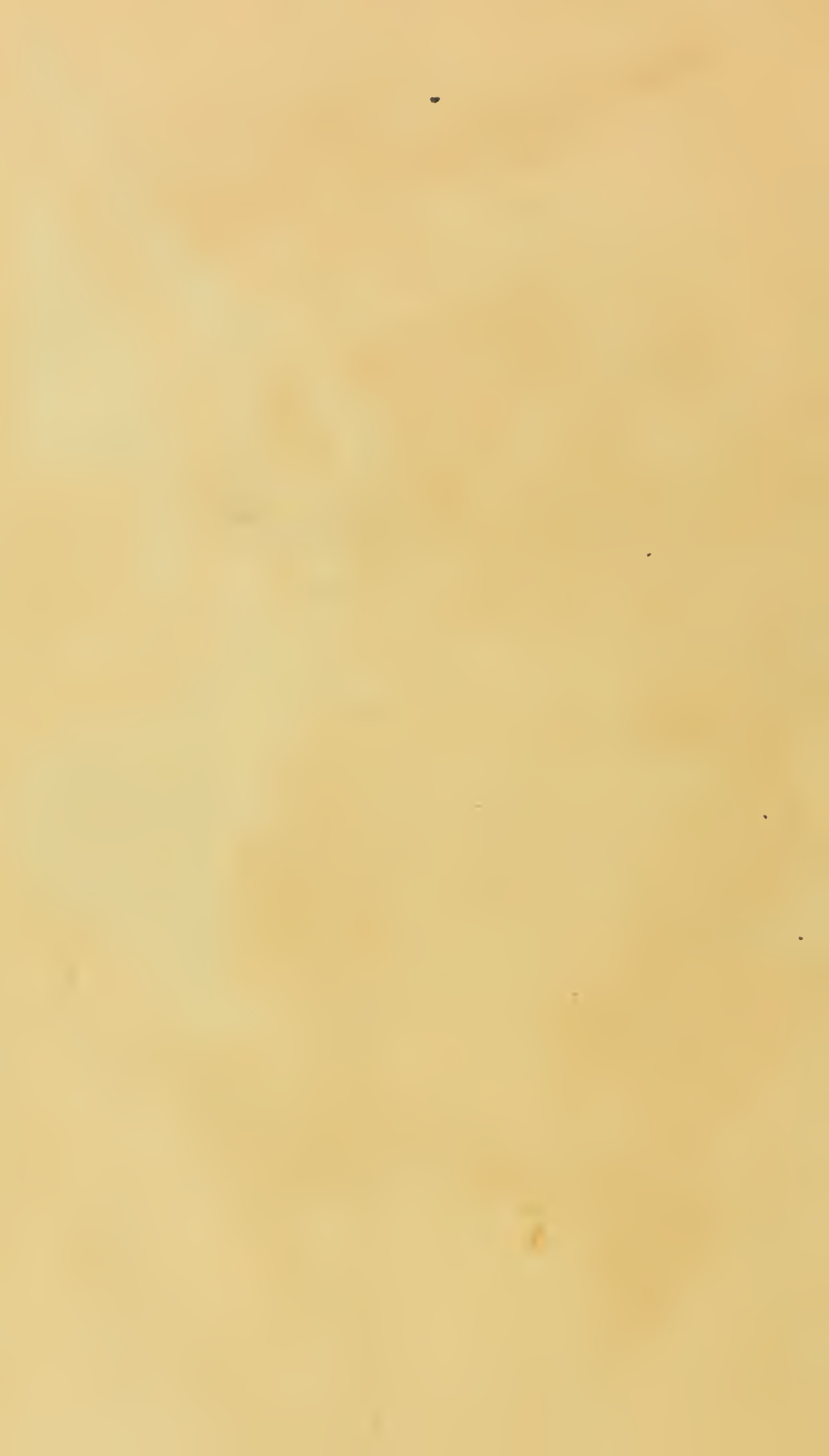
PLAN OF BELFAST, THE OVER CROWDED LOCALITIES, WITH COMPARISON OF DISTRICTS.





PLAN OF BELFAST. THE NEW STREETS & IMPROVEMENTS (BLUE)







PLAN OF BELFAST - FEVER LOCALITIES OF 1847 - (BLUE)



SOUTH.

Wm. Smith, Lith. Belfast.



PLAN OF BELFAST - CHOLERA LOCALITIES OF 1832, 1846 - WITH COMPARISON OF DISTRICTS IN 1847.

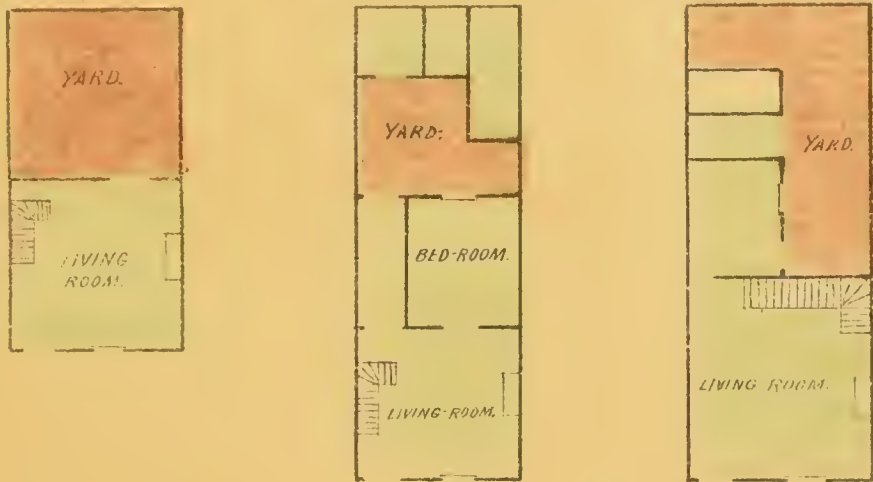




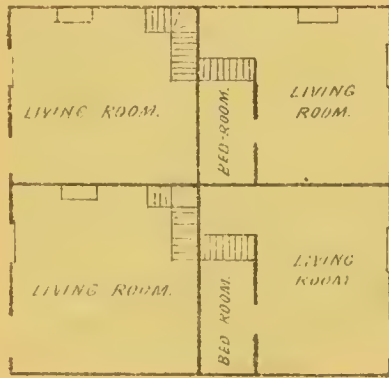
NEW-LODGE-ROAD DISTRICT.  
GROUND PLAN OF ARTISANS' DWELLINGS.  
HOUSES WITHOUT YARDS.



(II.) HOUSES WITH YARDS



(III) HOUSES BACK TO BACK.



SPECIMENS OF OVERCROWDING.

