

SECTION I.
SANITARY SCIENCE & PREVENTIVE MEDICINE.

—
ADDRESS,

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PRESIDENT OF THE SECTION.

I HAVE to thank the Council of the Sanitary Institute of Great Britain for the honour they have done me in selecting me to preside over this important section of the Congress.

It would be impossible to state what subjects might not be included under the comprehensive title of this section, namely, "Sanitary Science and Preventive Medicine." Fortunately the organisers of the Congress have arranged for two other sections, which relieves this one of dealing with *all* the subjects comprised under the term sanitary science. I need scarcely say that with such a wide expanse of subjects before me, there arises some little difficulty in selecting one which would be acceptable to the section, and which at the same time I might claim to discuss with some authority. I propose to address you on the subject of "Statistical Measures of the Health of Communities."

In the absence of any system of recording the prevalence of *sickness*, the only way we have of arriving at a general estimate of the health of any district is by making use of the information afforded by the number of the deaths among its inhabitants, the nature of the diseases of which they die, and the relative proportion of the causes of death to the total, and to one another, and their relation to other conditions with which I desire specially to deal on this occasion. A death rate does not necessarily indicate the amount of *disease* prevalent in a district; for instance, there are some diseases, such as influenza,

which cause but few deaths, but which may almost suspend the activity of a population. We must look therefore to other means of measuring the *sickness* rate, and this can only be partially done. Many are sick who do not know it, or who take no notice of it for a long time, and there is not yet any method of recording the sickness that is known. Indeed, it is improbable that any reliable record of sickness will ever be established. Nevertheless, many very effectual attempts have been made to estimate the extent to which sickness prevails in certain communities, especially with the view of discovering data upon which to make rules for the working of sick clubs and benefit societies. In an address by Sir James Paget, delivered in connection with the International Health Exhibition in London, this subject has been dealt with in a singularly able manner, and illustrated by a series of statistics admirably compiled and ingeniously arranged by Mr. Sutton, whose ability in such matters is worthy of the highest praise. By the kind permission of Sir James Paget, I am in a position to make use of Mr. Sutton's valuable figures for your benefit. Sir James Paget said:—*

"It is a common expression that we do not know the value of a thing till we have lost it; and this may be applied to the losses of work which are due to losses of national health. There are very few cases in which these can be estimated with any appearance of accuracy; but I am helped to the best within our present reach by Mr. Sutton, the Actuary to the Registry of Friendly Societies. In his office are the returns for many years past, of the sickness and mortality among the members of a very large number of these societies; and, among other things, there is recorded the number of days for which each member, when 'off work' on account of sickness, receives money from his society. Hence Mr. Sutton can estimate, and this he has been so good as to do for me, the average number of days' sickness and consequent loss of work among several hundred thousands of the workmen and others who are members of these societies. From the entire mass of these returns he deduces that the average number of days' sickness, per member, per annum, is very nearly $1\frac{1}{2}$ weeks; and this agrees, generally, with the estimates made in other societies by Mr. Neison and others. But the average thus obtained includes the cases of members of all ages, and among them many cases of chronic sickness and inability to work during old age. In order, therefore, to get a better idea of the actual annual loss of work through sickness, he has calculated the average annual number

* British Medical Journal, Vol. I., 1884, p. 1191.

of days' sickness of each person during what may be deemed the normal working time of life; that is, between 15 and 65 years of age. This he has done among the members of the large group of friendly societies known as the Manchester Unity of Oddfellows; and then, on the fair assumption that the rates of sickness of the whole population during the working years of life would not be far different, he has calculated the following tables, showing the average annual rates of sickness of each person enumerated in the census of 1881 as living between the ages of 15 and 65.

TABLE I.

AGES.	Number of Males: Census of 1881 (England and Wales).	Weeks' Sickness per annum, according to the experience of the Manchester Unity.	Average Sickness per Individual per annum (in Weeks).
15 to 20	1,268,269	844,428	·666
20 " 25	1,112,354	820,183	·737
25 " 45	3,239,432	3,224,134	·995
45 " 65	1,755,819	4,803,760	2·736
All ages from 15 to 65 ..	7,375,874	9,692,505	1·314

AGES.	Number of Females: Census of 1881.	Weeks' sickness per annum, according to the experience of the Manchester Unity.	Average Sickness per Individual per annum (in Weeks).
15 to 20	1,278,963	851,701	·666
20 " 25	1,215,872	896,685	·737
25 " 45	3,494,782	3,476,146	·995
45 " 65	1,951,713	5,368,229	2·751
All ages from 15 to 65 ..	7,941,330	10,592,761	1·334

Briefly, it appears from these tables that the average time of sickness among males during the working years is 1·314 weeks—that is, a small fraction more than nine days each in each year—

and that among females it is yet a small fraction more. The result is that, among males, there is a loss of 9,692,505 weeks' work in every year, and among females a loss of 10,592,761 weeks. Thus we may believe that our whole population between 15 and 65 years old do, in each year, 20,000,000 weeks' work less than they might do if it were not for sickness. The estimate is so large that it must, on first thoughts, seem improbable; but, on fair consideration, I believe it will not seem so. For the members of the Manchester Unity, who are in the working time of life, the reckoning is certainly true, and it is founded on the experience of between 300,000 and 400,000 members. In respect of health, they may represent the whole population at least as well as any group that could be taken. They are not very strictly selected; they are not picked lives; yet they are such as are able, when they are in health, to earn good wages or good salaries; and, as their prudence in joining this association shows, they are comparatively thrifty and careful persons. They do not, at all events, include many of the habitual drunkards, the cripples or utter invalids, or those who, through natural feebleness, or early disease, or mere profligacy, cannot earn enough to become members or maintain themselves in membership. Neither do they include many of the insane, or imbecile and idiotic, of whom there are, in our population, nearly 70,000, doing no work, and losing not less than $3\frac{1}{2}$ millions of weeks' work in the year."

No further proof is necessary of the great loss the community suffers from sickness, and therefore as death statistics are practically our only measure of the prevalence of sickness, and the only generally-available statistical measure of the health of communities, it is of the utmost importance that we should know the exact value to be attached to these measures, and the fallacies to which we are liable in making use of them. Most of you—indeed, I think I may say all of you—are familiar with the paragraphs which appear weekly in our newspapers announcing that the death rates of such and such towns are so many per thousand and with similar statements, recurring quarterly or annually, for the whole of each of the three divisions of the United Kingdom and of their various subdivisions. Thus, if the following list be examined, we find that, among the great towns of the world, the death rates, taken upon an average over a series of years, vary from 19·9 in Christiania to 48·0 in Madras :—

Calcutta	30·9	Paris	26·4
Bombay	34·8	Geneva	22·6
Madras	48·0	Brussels	25·4

Amsterdam	25·9	Trieste	34·1
Rotterdam	26·1	Rome	28·6
The Hague	24·6	Naples	31·4
Copenhagen	24·8	Turin	26·8
Christiania	19·9	Venice	28·5
St. Petersburg	42·1	Alexandria	42·4
Berlin	29·0	New York	27·7
Hamburg	25·8	Brooklyn	23·6
Dresden	25·1	Philadelphia	20·6
Breslau	31·2	Baltimore	22·2
Munich	34·0	London	22·0
Vienna	27·9	Dublin	27·9
Buda Pesth	37·1	Edinburgh	21·4

Now when reading these various paragraphs many of you might say, "Oh! such a place is very unhealthy; the death-rate is 40 per 1,000, and such another place is 20 per 1,000—just think if I lived in the former place my chance of life would be only half what it would be if I lived in the latter." Undoubtedly the death-rates published weekly, quarterly, and annually by my colleagues in England and Scotland, and by me in Ireland, are *prima facie* evidence of the relative healthiness or unhealthiness of the population to which they refer, and no doubt a very high death-rate does in nearly every case indicate unhealthiness, and a very low death-rate indicates healthiness of the population to which it relates; but it does not at all follow that a death-rate of, say 40 per 1,000 in one place indicates double the unhealthiness that a death-rate of 20 in another does. To speak in common parlance, the high death-rate really indicates that the population to which it refers has a delicate constitution, and that with a low death-rate a robust constitution. It would be impossible in the time at my disposal on the present occasion, to consider all the details which may tend to modify the significance of comparative death-rates, but I think it will be instructive to deal with some of the more important. It is important, in the first instance, to inquire under what circumstances we may expect to find a low and a high death-rate respectively. If a people, well-fed, well-housed, and well-clothed (in fact well-off), and the district is well-drained, and the climate moderate, we may expect, all other things being equal, to find a low death-rate.

Yet, if the people are employed at unhealthy occupations, and if the population includes an undue proportion of young children, or very old people, the death-rate will be high.

If, on the other hand, a population is badly fed, badly housed, and the district is badly drained, we may expect to find a high

death-rate, even although the occupations are healthy, and the age constitution of the population duly proportioned.

In estimating the value of death-rates as a test of healthiness, there are some elements to which too much importance appears to have been attached. It is too much the custom to attach exaggerated importance to the proportion of deaths from "zymotic" diseases of an infectious or catching nature as evidence of unhealthiness. I admit that the prevalence of infectious diseases and their fatality is a very important element in estimating the health of a community; nevertheless, if the death-rate from any particular group of diseases was taken as a single test of unhealthiness, I should choose the constitutional, not the zymotic group, as the most reliable. If we take London and Dublin for example, and contrast them as to the relative mortality from particular groups of diseases, we find that the deaths from zymotic diseases, years 1871-80 were 59.3 per 10,000 of population in Dublin, and 48.5 in London, or 18 per cent. greater in Dublin, whereas the death-rate from constitutional diseases in Dublin was 52.6, while in London it was 42.0, or 20 per cent. less. The total death-rate in Dublin during the decade was 283 per 10,000, and in London 235, or 48 less.

Again, the infantile death-rate is much relied on, but a low infantile death-rate is quite consistent with a high general death-rate, as, for instance, happens to be the case in Dublin, where the general rate of mortality is high, but the infantile mortality is comparatively low. Attempts have been made from time to time to estimate what should be the death-rate of a healthy community, but in my opinion all such efforts have been signal failures; and we are driven to depend upon comparisons of death-rates in various countries with one another, or comparisons of different portions of the same community with the whole or with one another, as the only tests of the healthiness or unhealthiness of such communities. Thus, the average annual death-rate of the population of England and Wales for ten years, 1871-80, was 21.4; while in London it was 22.5. In Scotland it was 21.6 for the same period.

In Ireland for the same decade it was 18.3, and varied from 28.3 in Dublin to 14.1 in the rural districts of Connaught.

Now, do these varying rates truly represent the relative healthiness of the different communities to which they refer? I state, unhesitatingly, that they do not; that in some of these districts the people are less unhealthy, in other cases more unhealthy, than the rates represent them to be.

It is, therefore, of the utmost importance that when we find that *prima facie* a community has a very high death-rate

or a very low death-rate, or even in some cases an average death-rate, we should minutely investigate all the elements which compose such an exceptional death-rate, then having hunted down the peculiar elements to their habitat in a particular place, class of life, age, sex, or occupation, we shall be in a position to rightly estimate the significance of the high or low death-rate, as the case may be.

It will be necessary, in making such investigations, to consider the death rate in relation to the following conditions:—

1. The locality in which the people live; its climate, soil, &c.; its drainage; the density of the population, and the mode in which they are housed.
2. The wealth or poverty of the people, and their means of obtaining food and clothing.
3. The occupation and social position of the people, and the proportion of each class to the whole and to one another.
4. The age-composition of the population, *i.e.* the population living at each age, and therefore their expectation of life.
5. The diseases of which the people die.
6. The relations of births, marriages, and deaths to one another and to the population.

I shall now endeavour to touch upon each of these questions, and consider how far statistical measures can be fairly applied to their solution.

We have no statistical measure which can be applied as a test of the healthiness of a particular locality as such, although we can state with a considerable degree of accuracy that we are not likely to find a healthy population living in swampy grounds, or in a low-lying locality, which is not sufficiently drained. We also know that the inhabitants of a damp district may have their health materially improved by the drying of the soil by drainage works.

In the matter, however, of climate we can apply statistical tests, and I would take the familiar example of Dublin and London to illustrate this point. In Dublin we have a delicate population as compared with London. If we take the temperature of the air as one of the most important elements of climate, we find that the means for Dublin and London are not very different, Dublin being somewhat more equable in its temperature and therefore more favourable to delicate people.

Table II. shows by weeks a comparison between the death-rate in Dublin for five years ending 1883 with the mean temperature for the same period, and Table III. shows similar conditions for London. If curves be constructed representing the variations of weekly mean temperature in these two districts, compared with

TABLE II.—Showing a comparison between the mean temperature of the air (from observations taken at the Ordnance Survey Office, Phoenix Park, Dublin,) and the Death Rate in the Dublin Registration district, by weeks, for five years ending December, 1883.

Table with columns for Year, No. of Week, and sub-columns for each year (1879-1883) showing Mean Temperature, Death Rate per 1000 of population, and Death Rate per 1000 of population.

* At this date burial returns were first received under the Public Health Act (Ireland) 1878, and there was consequently a sudden decrease in the number of unregistered deaths.

TABLE III.—Showing a comparison between the mean temperature of the air (from observations taken at the Royal Observatory at Greenwich,) and the Death Rate in the London Registration district, by weeks for five years ending December, 1883.

Table with columns for Year, No. of Week, and sub-columns for each year (1879-1883) showing Mean Temperature, Death Rate per 1000 of population, and Death Rate per 1000 of population.

the weekly deaths, it will be seen (as an analysis of the tables proves) that while in each district sudden falls of temperature, or considerable cold, lasting for an extended period, are accompanied by material increase of death-rate, yet the addition to the death-rate in Dublin under such circumstances is much greater in proportion to the cause than it is in London, thus showing that the more delicate, in other words, the less healthy, population of Dublin is more easily injured by cold than the more robust population of London. *Why* this is so is a separate question but the fact, I think, will be found proved, whenever tested, that a population whose death-rate is extremely sensitive to alterations of temperature, is an unhealthy population and has generally a high death-rate at all times.

It has long been known that a very general relation exists between the density of a population and its death-rate; in other words, that where people are packed closely together we expect to find a high death-rate. This at first sight appears to be a mere truism, but I am glad to say that the old sanitary, or *unsanitary* maxim, "that a dense population has a high death-rate," is becoming less true every day, it has been proved by the operations of artisans' dwellings companies and others who have undertaken to provide dwellings for the working classes, that with reasonable precautions very dense populations can enjoy very good health and have very low death-rates. Unfortunately, however, this old maxim has a considerable degree of truth still left, and a glance at Table IV. shows that there is a correspondence between high death-rates and density of population, which may be best exemplified by contrasting Liverpool and Manchester with Leeds and Sheffield; but many notable exceptions will be observed in the same Table. The very natural inference has been drawn that the principal zymotic, or *infectious* diseases (as they are popularly called), contribute largely to this high death-rate in dense populations; a reference to Table IV. shows, however, that this influence cannot be very potent, and, indeed, Liverpool is the only instance in the Table where it is well marked. Some will consider that I should have taken an average over several years and not confined myself to constructing a Table for one year; but my experience has led me to believe that the variations in density of populations in towns are so great and rapid that it is difficult to deal fairly with the question at any considerable distance from a Census period. I have, therefore, confined my comparisons to the year 1881, where I am certain of the facts. It would appear that more can be done by rearranging and redistributing the dense populations within existing areas than by making futile attempts to diminish density. Working people *must* live near their work,

TABLE IV.—Showing the number of persons to an acre, the death-rate per 1,000 living, from all causes, and from principal zymotic diseases in 13 towns of the United Kingdom in the year 1881.

Cities and Towns.	Persons per acre.	Death rate per 1,000, all causes.	Death rate per 1,000. Principal Zymotic diseases.
London	50.8	21.2	3.6
Liverpool	106.3	26.7	4.5
Birmingham	47.9	20.0	2.7
Manchester	79.5	25.5	2.3
Leeds	14.4	21.6	2.9
Sheffield	14.5	21.1	2.7
Bristol	46.6	19.6	2.3
Bradford	25.5	19.7	2.0
Dublin	14.1	27.0	2.5
Belfast	34.7	23.6	2.4
Cork	35.4	26.2	4.0
Edinburgh	54.8	20.1	2.7
Glasgow	84.9	25.2	3.2

or at all events not very far from it, and the experience of artisans' dwellings companies has proved that density of population and good health are quite compatible with one another. We have not the means (except in Ireland) of measuring house accommodation by statistical standards, and it is much to be regretted that the system adopted in taking the Irish Census, of ascertaining exactly the nature of the house accommodation of the people has not been adopted in other countries. It would be out of place to go into details on this question now, and I must refer to the reports of the Irish Census for information upon the subject.*

The next question to discuss is the wealth or poverty of the people, and consequently their ability to obtain the necessaries of life, in the way of food, clothing, and house accommodation. I have made many attempts to establish statistical tests of these conditions, but the absence of reliable statistics of wages, the variations in the method of relieving the poor and needy, through the Poor Law or otherwise, have quite baffled my efforts. I believe statistics on these subjects would be difficult to compile, though not impossible; and, if compiled, I believe it would be difficult to utilize them.

* Reports of the Census Commissioners for Ireland for 1841—51—61—71 and 81.

Closely connected with the question of the poverty or wealth of a community, as a test of the significance of its death-rate, is that of the social composition of the community.

It is a matter of the utmost importance, when applying the death-rate as a test of health, that the relative numbers of the population belonging to each social class should be known. We are all, unfortunately, too well aware of the fact that the death-rate among the "weekly-wage-earning" class, especially among children, is higher than in the classes above it. Now, although the Census returns take note of the occupations of the people, they do not take note of the numbers of persons dependent for subsistence on each kind of occupation; thus, the Census reports tell us how many blacksmiths there are in the United Kingdom, but do not tell us how many blacksmiths' wives and children there are, and therefore how many persons are supported and dependent upon the trade of the blacksmith.

Some years ago the Dublin Sanitary Association—which has had so much to do with the organizing of this Congress—considered this question, and determined when the next census period approached, that they would ask the government to include returns of the social condition of the people of Dublin in the census returns for 1881. The government at once acceded to the request, and Table V., extracted from the annual summary of the weekly returns issued by my department, shows for the Dublin registration district, the number of the population belonging to each class, as extracted from the census returns of 1881, and their death-rates for the year 1883.

The variations in the death-rate between the classes and the sub-classes are remarkable. For example, in the "professional class" the death-rate is but 19·8 per 1,000, while in the "general service class and workhouse inmates" it is 36·8, or nearly double. Among domestic servants it is but 9·1, while among labourers it is 34·4, although both are drawn from the same stratum of society. These returns, and the use to which I have applied them, exist only for Dublin. In Dublin this method of dealing with mortality statistics is only in an experimental stage, and therefore must have many imperfections.

As similar statistics do not exist for any other locality, comparisons cannot be instituted between Dublin and other places, but nevertheless some lessons may be learned from studying the Dublin figures which may serve as useful illustrations of the point under discussion.

Table VI. shows, by age-periods, the composition of the various social classes, and Table VII. gives a summary, by percentages, of the more important elements in Table VI.

TABLE V.—Showing, in FIVE GENERAL CLASSES and EIGHTEEN GROUPS, the OCCUPATIONS of SOCIAL POSITION of the PERSONS whose DEATHS were registered in the Dublin Registration District during the 52 Weeks ending Saturday, 26th Dec., 1883; the Annual Death-rate represented by the Deaths registered; the Number of Deaths at each of Six Periods of Life, and the Number from each of the Principal Causes of Death.

Class	Occupation or Social Position	Population in each Class and Group in 1881	AGE PERIODS						CAUSES OF DEATH																																											
			Under 5 Years	5 and under 10	10 and under 20	20 and under 40	40 and under 60	60 and under 80	80 and upwards	Total	Small Pox	Malaria	Scarlatina	Typhus	Whooping Cough	Influenza	Simple continued and Intermitting Fevers	Enteric Fevers	Diphtheria	Convulsions	Diseases of the Respiratory System	Violence (Accidents, Homicide, and Suicide)	Other Causes																													
I.	FAMILIES OF THE PROFESSIONAL AND INDEPENDENT CLASS	34663	10161	30129	31102	11024	20848	20652	425	27	179	141	363	14	37	132	237	1100	1330	823	2131	238	4539																													
II.	MIDDLE CLASS	8728	248	30	12	45	53	79	29	2	1	2	2	2	...	4	4	17	35	4	37	5	160																													
III.	ARTIZAN CLASS AND PETTY SHOPKEEPERS	2371	39	3	6	5	7	11	7	...	3	...	...	...	...	1	...	4	4	...	6	...	25																									
IV.	GENERAL SERVICE CLASS	19030	311	16	15	39	53	122	66	...	1	1	3	2	2	3	3	15	14	2	60	3	217																													
V.	INMATES OF WORKHOUSES	6036	1782	228	44	271	480	632	97	...	...	...	...	...	...	2	2	5	10	23	40	12	217																							
													Annual Death Rate per 1000 of the Population in 1881	29·3	19·8	24·2	29·8	36·8	28·4	16·4	16·3	15·0	26·0	18·7	37·2	27·6	26·9	16·2	24·4	26·7	28·1	28·5	33·4	34·4																		
													Total Number of Deaths	698	1375	240	302	397	476	391	55	...	248	39	311	77	473	422	403	217	805	492	157	176	61	21	30	32	23	9	...	210	380	390	317	2781	1782					
													1000 of the Population in 1881	29·3	19·8	24·2	29·8	36·8	28·4	16·4	16·3	15·0	26·0	18·7	37·2	27·6	26·9	16·2	24·4	26·7	28·1	28·5	33·4	34·4	27·6	26·9	16·2	24·4	26·7	28·1	28·5	33·4	34·4	27·6	26·9	16·2	24·4	26·7	28·1	28·5	33·4	34·4

TABLE VI—Showing by AGES, in FIVE GENERAL CLASSES and EIGHTEEN GROUPS, the OCCUPATIONS or SOCIAL POSITION of the INHABITANTS of the Dublin Registration District.

CLASS.	OCCUPATION OR SOCIAL POSITION. [The 25,917 persons returned under the head "Unspecified" in Table 89 of the General Report on the Census have been distributed <i>pro rata</i> among the several groups to which they most probably belonged.]	AGES.							
		Under 5 years.	5 and under 15.	15 and under 20.	20 and under 40.	40 and under 60.	60 and under 80.	80 and upwards.	
	Population in each Class and Group in 1881.	37141	63701	31950	120867	64218	23874	1652	
	ALL PERSONS	37141	63701	31950	120867	64218	23874	1652	
	FAMILIES OF THE—								
I.	PROFESSIONAL AND INDEPENDENT CLASS	2947	4710	2428	9328	6654	4331	428	
II.	MIDDLE CLASS	6188	10858	7219	29843	8895	2904	121	
III.	ARTIZAN CLASS AND PETTY SHOPKEEPERS	12895	21424	10527	34980	13652	6289	365	
IV.	GENERAL SERVICE CLASS	16111	26709	14746	55697	29017	10617	734	
V.	INMATES OF WORKHOUSES								
	PROFESSIONAL AND INDEPENDENT CLASS.								
I.	1. Clerical, Medical, and other Professions; Naval and Military Officers; and Heads of Public Departments	938	1523	692	2763	1985	839	68	
	2. Merchants and Manufacturers, Higher Class ...	348	591	177	587	475	181	12	
	3. Persons of Rank and Property, not otherwise described... ..	961	2596	1629	5978	4194	3314	358	
II.	MIDDLE CLASS.								
	4. General Body of Officials—Civil Service, Banking, &c.	651	1060	468	1769	913	268	9	
	5. Traders (except Petty Shopkeepers), Business Managers, &c.	2691	4417	1365	5963	3564	1635	42	
	6. Clerks and Commercial Assistants	2247	3504	3661	9731	2749	669	36	
	7. Miscellaneous—including all Householders in Second Class Localities, not included in above	599	1847	1755	4280	1669	632	47	
III.	ARTIZAN CLASS AND PETTY SHOPKEEPERS.								
	8. Working Engineers, Engravers, Printers, Watchmakers, and Jewellers	1289	1822	789	2747	986	229	1	
	9. Building and Furnishing Trades	4417	6994	2392	9511	5165	1675	106	
	10. Clothing Trades	2399	4658	3791	11144	6115	2064	129	
	11. Food Supply Trades	1079	1623	612	2319	1182	553	14	
	12. Other Trades and Callings ranking with Trades	2929	5657	2983	7229	4322	1495	91	
	13. Petty Shopkeepers	782	1570	650	2059	1852	573	26	
IV.	GENERAL SERVICE CLASS.								
	14. Army, Police, Postal Delivery, and Prison Services, &c.	1515	1809	722	6811	1853	476	19	
	15. Domestic Services	1935	4282	6317	18913	8773	3311	207	
	16. Coach and Car Drivers, Varnishers, &c.	1581	2209	528	3229	1611	395	3	
	17. Hawkers, Porters, Labourers, &c.	10719	17767	6912	23274	15081	4837	316	
V.	INMATES OF WORKHOUSES.								
	18. Workhouse Inmates	361	642	237	1370	1569	1628	182	

TABLE VII.—Showing proportion per cent. of persons living in the Dublin Registration District at each age period who belonged to each of the classes of "occupations" and social position in 1881:

CLASSES.	All ages.	Under 5 years.	5 and under 15.	15 and under 20.	20 and under 40.	40 and under 60.	60 and under 80.	80 and upwards.
All Classes.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
I. Professional and Independent Class ...	8.7	6.0	7.4	6.9	7.7	10.4	18.4	25.9
II. Middle Class	16.4	16.5	17.1	20.8	17.2	13.8	10.8	7.5
III. Artizan Class and Petty Shopkeepers.	30.6	34.5	33.6	30.1	29.0	30.6	26.3	22.2
IV. General Service Class	44.3	43.0	41.9	42.2	46.1	45.2	44.6	44.4
V. Inmates of Workhouses								

Time will not permit an analysis of the interesting information contained in these two tables; but I would point out that, in the larger groups which are dealt with in the summary (VII.), the proportions living at different ages in each class of the population of Dublin do not differ as widely from one another as some might contemplate. I shall have again to refer to this point, when dealing with the relations of age-composition of populations to death-rate, to illustrate which, in connection with social class, Table VIII. has been constructed, where the death-rates of children under five years of age are set out by social class. It may be observed, in passing, that the death-rate of children among the professional group is 21.8 per 1000 living, while in the general service class, and workhouse inmates combined, it is 107 per 1,000 living, or about five times the proportion.

The next point to be considered in the application of statistical measures of health is the age-composition of the community to which the measure is to be applied. The number of persons living at different ages differs materially in different communities. In Table IX. the proportion of persons per 1,000 living at each age is compared for England and Ireland. From this it would appear that the number of very young people in England is relatively much greater than in Ireland, the number of children under five

TABLE VIII.—*Shewing the death rates in 1883 per 1,000 living, under 5 years (according to the Census of 1881), for each group of occupations in the Dublin Registration District.*

Occupation or Social Position.	Rate per 1,000 living under 5.
ALL CHILDREN UNDER 5 YEARS	80·6
CLASSES.	
<i>Deaths of children under 5 years in the families of the—</i>	
I. PROFESSIONAL AND INDEPENDENT CLASS	21·8
II. MIDDLE CLASS	51·9
III. ARTIZAN CLASS AND PETTY SHOPKEEPERS	70·2
IV. GENERAL SERVICE CLASS }	107·0
V. INMATES OF WORKHOUSES }	
I. PROFESSIONAL AND INDEPENDENT CLASS—	
1. Clerical, Medical, Legal, and other professions, Naval and Military Officers; and Heads of Public Departments.....	32·0
2. Merchants and Manufacturers, Higher Class	8·6
3. Persons of rank and property, not otherwise described ...	16·6
II. MIDDLE CLASS—	
4. General body of Officials—Civil Service, Banking, &c. ...	26·1
5. Traders (except Petty Shopkeepers), Business Managers, &c.....	48·3
6. Clerks and Commercial Assistants.....	62·3
7. Miscellaneous—including all Householders in second-class localities not included in above	88·5
III. ARTIZAN CLASS AND PETTY SHOPKEEPERS—	
8. Working Engineers, Engravers, Printers, Watchmakers, and Jewellers.....	79·9
9. Building and Furnishing Trades.....	80·1
10. Clothing Trades.....	65·4
11. Food Supply Trades.....	56·5
12. Other trades and callings ranking with trades	56·7
13. Petty Shopkeepers	51·8
IV. GENERAL SERVICE CLASS—	
14. Army, Police, Postal Delivery, and Prison Services, &c....	83·2
15. Domestic Servants	26·4
16. Coach and Car Drivers, Vanmen, &c.	83·5
17. Hawkers, Porters, Labourers, &c.....	110·7
V. INMATES OF WORKHOUSES	—

years being 135·5 per 1,000 inhabitants in England, as compared with 111·3 in Ireland. In the case of infants under one year it is more remarkable, there being 29 “babies” in England to 20·3 in Ireland, a fact which is very different from commonly received opinions. At the other extreme of life we find that there are more old people in proportion in Ireland, where those above 60 number 106·2 per 1,000 of the population, than there are in England, where they number but 73·8 per 1000.

Now as very young children die at a greater rate than older children, or persons in middle life, we might expect the death-rate of England to be much higher than that of Ireland,

TABLE IX.—*Showing the age-compositions of the populations of England and Ireland in 1881:—*

Age Periods.	ENGLAND.		IRELAND.	
	Population 1881.	Number in every 1,000 of the Population	Population 1881.	Number in every 1000 of the Population
Under 1 year	753,113	29·0	104,965	20·3
1 and under 2....	684,412	26·3	102,093	19·7
2 „ 3....	704,409	27·1	118,864	23·0
3 „ 4....	691,695	26·6	122,507	23·7
4 „ 5....	687,235	26·5	127,554	24·6
Total under 5....	3,520,864	135·5	575,983	111·3
5 and under 10....	3,147,396	121·2	621,637	120·1
10 „ 15....	2,800,331	107·8	616,370	119·1
15 „ 20....	2,547,232	98·1	558,956	108·0
20 „ 40....	7,663,086	295·1	1,362,325	263·2
40 „ 60....	4,379,264	168·5	889,726	172·1
60 and upwards	1,916,266	73·8	549,839	106·2
Total	25,974,439	1,000·0	5,174,836	1,000·0

TABLE X.—*Showing the age-compositions of the populations of London and Dublin in 1881:—*

Age Periods.	LONDON.		DUBLIN. (Dublin City, Rathmines, Donnybrook, Blackrock, & Kingstown).	
	Population 1881	Number in every 1000 of the Population.	Population 1881.	Number in every 1000 of the Population.
Under 1 year	111,593	29·2	7,714	23·7
Total under 5	497,044	130·2	34,996	107·6
5 and „ 10	419,740	110·0	30,609	94·1
10 „ „ 15	366,111	95·9	28,226	86·8
15 „ „ 20	368,628	96·6	32,482	99·9
20 „ „ 40	1,277,634	334·8	113,700	349·6
40 „ „ 60	647,551	169·7	60,756	186·8
60 and upwards.	239,775	62·8	24,456	75·2
Total....	3,816,483	1,000·0	325,225	1,000·0

but it is only a *little* higher. And why is this? Because the old people, whose lives are also precarious, are more numerous in Ireland than in England, and thus tend to diminish the excess of mortality of England over Ireland. Table X. makes a similar comparison between the age-periods of London and Dublin with somewhat similar results as regards age-composition of the population, but the results of the investigations of the death-rate will prove very different.

I have just referred to the fact that death-rate varies much at different periods of life, being high at the extremes, where the feebleness of infancy and of old age renders the very young or very old liable to death from causes which would scarcely affect those in the robust health of adult or middle life. In Table XI. we have set out by age-periods the death-rates of the populations of England and Ireland.

TABLE XI.—Showing the population of England and Ireland by age-periods according to the Census of 1881, and the death-rate at each age period for the same year :

Age Periods.	ENGLAND.			IRELAND.		
	Population 1881.	Deaths.		Population 1881.	Deaths.	
		Number.	Rate per 1000 living.		Number.	Rate per 1000 living.
All ages	25,974,439	491,935	18.9	5,174,836	90,035	17.4
Under 1	753,113	114,976	152.7	104,965	11,481	109.4
1 & under 2	684,412	35,033	51.2	102,093	3,366	33.0
2 " 3	704,409	15,682	22.3	118,864	2,142	18.0
3 " 4	691,695	10,577	15.3	122,507	1,436	11.7
4 " 5	687,235	7,914	11.5	127,554	1,065	8.3
Total under 5	3,520,864	184,182	52.3	575,983	19,490	33.8
5 & under 10	3,147,396	18,084	5.8	621,637	3,072	4.9
10 " 15	2,800,331	9,102	3.3	616,370	2,275	3.7
15 " 20	2,547,232	11,806	4.7	558,956	2,990	5.3
20 " 25	2,328,226	14,103	6.1	477,296	3,480	7.3
25 " 35	3,793,461	30,681	8.0	633,782	5,526	8.7
35 " 45	2,940,753	35,222	11.9	558,776	5,770	10.3
45 " 55	2,173,446	37,067	16.2	443,055	6,669	15.1
55 " 65	1,534,086	47,337	30.8	364,120	10,836	29.8
65 " 75	852,424	53,607	61.1	213,571	13,539	63.4
75 " 85	298,072	40,214	128.9	93,675	12,324	131.6
85 and upwards	38,148	10,530	243.3	17,615	4,064	230.7

It will be observed that in both countries the highest death-rate is among children, the deaths under one year being 109.4 per 1,000 living at that age in Ireland, and 152.7 per 1,000 in England, as compared with general death-rates of 17.4 and 18.9 respectively. The table shows that the death-rate steadily decreases as age increases, until the age-period of from ten to fifteen years is reached, when the rate reaches the minimum both in Ireland and England, being 3.7 in Ireland, and 3.3 in England. After this period the troubles and risks of life are entered upon, and the death-rate steadily rises until the age of sixty-five is passed, when the rate increases by enormous strides.

It is remarkable, on comparing Ireland with England, that up to the age of ten the death-rate of English children is higher than that of Irish, and after that period the Irish death-rate is almost uniformly in excess of the English. It looks as if the real struggle for existence were harder in Ireland than on the other side of the Channel. This, however, is not likely to be the case, and the difference is probably owing to the larger emigration from Ireland. It is well known that in all countries of Europe it is the most able-bodied, strong-minded, and enterprising who emigrate, to seek wider fields for their energies than are afforded by the overcrowded countries of the Old World. This principle affects Ireland more than England, just in proportion as the number of emigrants is greater; the able-bodied and energetic go, the delicate and less active remaining. The higher death-rate among children in England as compared with Ireland cannot, however, be thus explained. Is it that Irish mothers are more careful of their little ones than English mothers? I trust that, with all our differences, there is none between Englishwomen and Irishwomen in their love and care of their little ones. Indeed, it would ill become me to enter upon such a comparison, as my mother was an Irishwoman, and the mother of my children is an Englishwoman. The explanation is simple, though it may surprise some: it is the difficulty of bringing up healthy children in large towns, and the mothers leaving them, to work in mills or at other occupations.

In England there are many more large towns than in Ireland. In England of the 25,974,439 people (according to the census of 1881) 14,626,131 live in towns having a population of 10,000 or upwards, and 11,348,308 live in country districts and small towns.

In Ireland of the 5,174,836 only 845,839 live in towns with populations over 10,000, while the balance 4,328,997 live in country districts and villages. In other words 56.3 per cent. of the English people belong to town populations, and but 16.3 per cent. of the Irish people live in considerable towns.

The following statement, showing for 1881 the proportion of deaths under one year to every thousand births, demonstrates the danger to infant life in large towns; and shows that this danger is, as a rule, greater in manufacturing than in other towns:—

London	151	Glasgow	151
Birmingham	167	Dublin	170
Manchester	176	Belfast	147
Edinburgh	135		

Again, with a view of testing the question further, I take two registration counties of England, namely, Lancashire and Somersetshire, the former of which contains a large population resident in towns and the latter a small proportion of its population so residing, and I find that in the former case the infant death-rate was 167, while in the latter it was only 116.

TABLE XII.—Showing by age-periods the death-rate per 1,000 living at each period in London and in Dublin in 1881.

Age-Periods.	Deaths per 1000 living in LONDON.	Deaths per 1000 living in DUBLIN.
Under 1 year.....	175·4	213·2
1 and under 5 years	35·7	38·9
Total under 5 years	67·0	81·2
5 and under 20 years	5·2	8·5
Total under 20 years.....	23·8	28·6
20 and under 40 years	8·9	14·7
40 " 60 "	20·7	32·2
60 " 80 "	62·0	90·0
80 years and upwards	204·3	243·1
Total	21·2	27·0

The difference in mortality, not only among infants, but at other ages, in some towns, as compared with others, cannot be altogether attributed to the peculiarities of a manufacturing population, for if we compare London and Dublin, neither of which can be considered as inhabited by populations *especially* engaged in manufacturing industries, we find, according to Table XII., that the mortality of Dublin at all ages, especially among infants, far exceeds that of London.

Now, why is this? I am unable, from want of information, to give a positive answer to this question; but I believe that a great deal of the difference depends on the social condition of the communities, and the more prosperous condition generally of the lower social strata of society in London than in Dublin.

This is, no doubt, a bold assertion, especially when we know how great are the miseries of outcast London. If, however, we look again to the social condition table for Dublin (Table VI.) and to the mortality tables (Table V.) by social classes, we see that the vast bulk of the infantile mortality takes place among the "general service" and "pauper" class, which (Tables V. and VI.) constitute nearly half (44·3 per cent.) of the population of the Dublin registration district.

It is a melancholy fact, but nevertheless it is a fact, that the struggle for maintenance among the members of a large family (and indeed not unfrequently in a small family), in the lower strata of society, is so intense, that it results in the injury of all the members, and the death of many. This is really one of the first questions of the day, and one which, unfortunately, has not been sufficiently attended to by many social reformers, but with which I cannot deal here.

In connection with the question of the effect of age-composition of a community in relation to its death-rate, I would draw special attention to some remarks on the subject in the summary of births and deaths of the Registrar General for England, for the year 1883. In this summary a very ingeniously constructed table is introduced, by which this effect of age-composition on death-rate of population is shown, and death-rates corrected according to standards derived from the age and sex composition of the population of England and Wales, are given for all the large towns of England and Wales and then compared with the recorded death-rates. In some cases the differences between the two rates are very considerable. I have had some experimental calculations made on Irish death-rates, based on the principles suggested by the Registrar General of England, and there can be no doubt that such investigations will tend to throw further light on the statistical measures of the health of communities.

TABLE XIII.—Average death-rates per 10,000 for certain diseases and groups of diseases in the Dublin Registration District and the London Registration District for the decade 1871-80.

Name of Disease.	Death-rate, per 10,000 living.	
	Dublin.	London.
Zymotic Diseases:		
Small-pox.....	9.2	4.4
Measles.....	5.4	5.1
Scarlatina.....	9.6	6.0
Diphtheria.....	1.1	1.2
Whooping Cough.....	5.5	8.2
Fever.....	10.0	3.8
Dysentery.....	0.5	0.2
Diarrhœa.....	7.6	9.4
Other Zymotic Diseases.....	10.4	10.2
Total.....	59.3	48.5
Constitutional Diseases:		
Phthisis or Pulmonary Consumption.....	31.5	24.3
Other Constitutional Diseases.....	21.1	17.7
Total.....	52.6	42.0
Local Diseases:		
Brain and Nervous System.....	38.3	25.4
Heart and Organs of Circulation ..	13.4	12.4
Respiratory Organs.....	56.9	47.2
Digestive Organs.....	9.6	9.7
Other Local Diseases.....	6.0	7.2
Total.....	124.2	101.9
Developmental Diseases.....		
Violent Deaths.....	6.7	8.0
Unclassified and Ill-defined.....	4.9	0.6
All causes.....	283.5	225.1

At the commencement of these remarks I said, when speaking of the importance attached to the death-rate from zymotic diseases as a measure of health, that if I were to take the death-rate for any particular group of diseases, I would choose the constitutional, not the zymotic, as the test.

I would here again refer to the instances of Dublin and London as useful examples, the former being an unhealthy, the latter a healthy town population.

Table XIII gives a summary for ten years of the rate of mortality from various causes in Dublin and in London.

It will be observed that in nearly every instance the death-rate of Dublin is somewhat in excess of that of London; in many diseases the excess is small.

Thus, in the case of the zymotic diseases, the excess of Dublin over London is not, proportionately, nearly so great as in the case of constitutional diseases; in the former case the ratio is 59.3 to 48.5, in the latter 52.6 to 42.0.

Among the constitutional diseases we find that the death-rate per 10,000 from phthisis or pulmonary consumption alone is 31.5, against 24.3, and closely connected with this we find that the death-rate from diseases of the respiratory organs is 56.9 in Dublin, against 47.2 in London. This accords with my former remarks on the delicacy of the population of Dublin compared with London as measured by the effect of sudden falls of mean temperature on the death-rate of these two towns. I believe that the prevalence of the class of diseases termed "constitutional," as measured by the death-rates from these diseases, will be found to be a better gauge of the health of the community than the prevalence of any other single class of fatal affections, and in this sense these diseases may be truly termed "constitutional," whatever objection there may be to the term when viewed by the scientific nosologist.

My remarks have now extended almost beyond the limits which should be placed on an address such as this, and I shall not attempt to analyse the statistics which are available regarding the relations between marriage-rate, birth-rate and death-rate; but I think I may ask you to take my word for it that when these three rates do not bear a due proportion to one another in any given community there will be found to be serious defects in the health of that community, and not improbably a serious defect in its moral as well as its physical health. The relation between cleanliness and godliness is deeper than many who use the common proverb are aware.

In conclusion, I have a word to say about the contrast between the health of the inhabitants of town and country districts. I have recently been engaged upon an analysis of the returns of

marriages, births, and deaths in Ireland for the ten years comprised between the census periods of 1871 and 1881. The report on this subject has been recently presented to Parliament, and will soon be in circulation. From this analysis I find that the deaths in the districts in Ireland, comprising towns with a population of 10,000 and upwards, during the decade were at the average annual rate of 225·1 per 10,000 of the inhabitants, while in the districts which comprised no considerable towns the rate was only 166·2 per 10,000. From the principal groups of diseases the rates were as shown in Table XIV. :—

TABLE XIV.—*Showing the death-rate per 10,000 of the mean population from certain causes in districts containing towns of a population of 10,000 and upwards; in rural districts; and in all Ireland for the 10 years 1871–80.*

Cause of Death.	Rate per 10,000 living.		
	In Town Districts.	In Rural Districts.	In all Ireland.
All causes	225·1	166·2	182·6
Small Pox	3·8	0·5	1·4
Measles	3·2	1·7	2·1
Scarlet Fever	6·5	3·5	4·3
Diphtheria	0·8	0·6	0·6
Whooping Cough	4·4	3·1	3·5
Fever	7·2	5·1	5·7
Erysipelas	0·7	0·5	0·6
Puerperal Fever	0·8	0·6	0·7
Childbirth	1·0	1·1	1·1
Influenza	0·1	0·2	0·2
Dysentery	0·5	0·5	0·5
Diarrhœa	5·6	2·6	3·4
Cholera	0·2	0·1	0·1
Phthisis or Pulmonary Consumption	27·7	16·4	19·6
Diseases of Respiratory Organs.....	38·4	22·6	27·0
Violence	5·2	3·4	3·9
Other causes and unspecified causes	119·0	103·7	107·9

It is unnecessary to give a detailed analysis of this table, but it may be pointed out that the death-rate from nearly every cause is greater in the town districts than in the country districts. It is, however, specially worth noting that the deaths from consumption in town districts were at the rate of 27·7 per 10,000 of the mean population, and in the country districts the rate was but 16·4, and in diseases of the respiratory organs the ratio was for the former 38·4, and for the latter 22·6. I shall not venture to analyse any further the information contained in this report which will be in the hands of the public in a few days. I must now bring these remarks to a close, and trust that I have not occupied your time unprofitably in asking you to consider with me some of the *many* and not a few of the *most* important points we have to take into consideration when applying statistical measures as tests of the health of communities.

SIR ROBERT RAWLINSON, C.B., the President of the Congress, hoped they would give a hearty vote of thanks to Dr. Grimshaw for his most instructive address. The figures Dr. Grimshaw had given would be useful for future reference and study. Great as the loss from sickness had been shown to be, if they had some of their teetotal friends there who could give a summary of the losses by excessive drinking, it would be found to amount to a much larger sum than the loss in the ordinary course by ill health. The rates of mortality in different towns were shown by the weekly returns of the Registrar General, and the variations last week were from 14 in the lowest, to 25 in the highest locality. A short time ago he had gone through the suburbs and outskirts of Liverpool, and had been shocked beyond measure with the misery and poverty to be seen on the streets. He saw children covered with dirt from their toes to the crowns of their heads, ragged almost to extreme nakedness, shoeless and stockingless. He had seen a similar state of things in Glasgow also, and he was sorry to say he had observed it likewise in Dublin. Children, pretty as angels, fair, flaxen-haired, and ruddy cheeked, rambling about the streets shoeless and stockingless! Was this state of things to continue? Surely not. There were the young roughs, the jail-birds, brought up from infancy to know nothing but poverty and vice, having no inducement but to live upon Society by thieving, lying, and all other ways that children left to their own devices would pursue. The depredations committed by these uncared-for children had really to be paid for by the classes above them. If their Sanitary Science was to be of any use to Society Sanitarians must go to the root of the matter and consider that it was a standing disgrace to civilisation to see bare-legged and naked children running about our streets as if they belonged to nobody. Men did not treat

their animals in that way—they fed and housed them—and the only living creatures uncared for in our great so-called civilised country were the lower class children. This should not be, and he hoped we were beginning to see that it is our duty to commence at the lower strata of Society and to make improvements in the direction which he had indicated. It used to be considered in England that the Irish were more rowdy than the English, but judging from one of the diagrams prepared by Dr. Grimshaw, Englishmen were one-eighth more rowdy than Irishmen, for violent deaths were eight in England as compared with seven in Ireland. Of course "violent deaths" were of all kinds, but the fact showed clearly that in England they could not boast of their civilisation being superior to that of Ireland. They in England had even something to learn from Ireland.

On "The Administration of the Public Health Act in Ireland with Regard to the Duties of Officers of Health," by D. EDGAR FLINN, L.R.C.S.I., M.R.C.P., Surgeon to St. Michael's Hospital, Kingstown.

The subject about which I have the honour to address this section is one possessing some particular features of interest, and I trust it will not be presumptuous on my part to entertain the hope that the few remarks I have to offer on the working of the Public Health Act in Ireland with regard to the duties of officers of health will be of interest to the members of the Sanitary Congress assembled in this section.

Having held the appointment of medical officer of health in a district comprising a wide area in England for nearly six years, and having had considerable experience of the working of the English Public Health Act, I have been particularly impressed since my return to Ireland, two years ago, with the manner in which the sanitary laws appear to be carried out in Ireland, and it struck me that the present would be an opportune time to ventilate the subject of sanitary legislation in regard to the duties of health officers, and so court the opinions of those who take an interest in sanitary work. Now, I do not desire to appear as if finding fault with the administration of the Public Health Act in Ireland, but believing that the health and well-being of the people should be the first and most important aim of our legislators, and knowing that a vast deal yet re-

mains to be done in this question of public health in Ireland, I trust this paper will be received in the spirit in which it is intended.

The working of the Public Health Act in Ireland has in a great majority of districts well nigh become a dead letter. One bright exception particularly stands forth, and that is the administration of the Sanitary Act in the City of Dublin, where, under the unwearying zeal of Dr. Cameron, the superintendent medical officer of health, the fever dens, the filthy court and lane ways, and the over-crowded tenement houses are fast disappearing, and the high rate of mortality which a few years ago prevailed, is gradually diminishing.

One of the main causes of the slow progress of sanitary reform in this country, is that there are no local boards nor combinations of districts; the boards of guardians are the sanitary authorities for the Irish rural districts, and though it cannot possibly be stated that they are as a general rule opposed to sanitary reform, yet they are never anxious to move in any measure of sanitary work that will cause any outlay, and are deep in their expressions of gratitude to their medical officers of health for not troubling them with verbose reports, which may involve them in a heavy, and in their opinion useless, expenditure on sewage, water, or other works, and so year after year the Public Health Act is systematically evaded.

It is well known that petty elective authorities in small Union districts are apt to obstruct rather than forward sanitary improvement of any kind, and for the most part they render any uniform and efficient system of administration almost impossible, consequently the medical officers of health and sanitary inspectors are powerless, and no doubt have great difficulties to contend with; but there is a central authority, the Local Government Board, which seems in Ireland to be unmindful of using the ordinary means in its power of enforcing the proper carrying out of the provisions of the Public Health Act.

It is a noticeable fact that the reports of medical officers of health or inspectors of nuisances seldom, if ever, appear in the public press in Ireland, and consequently the public are left in total ignorance of the state of the health, mortality, and other vital statistics of the immediate district or neighbourhood wherein they reside. These reports are frequently left unread and consigned to the nearest waste paper basket, as documents of a mere formal nature that require no special notice on the part of the sanitary authority. Why this wanton neglect? Because these reports contain truths difficult to digest. The medical officer of health may have dis-

covered that there is not proper sewerage in some portion of the urban or rural district, or his attention may have been drawn to nuisances that exist which are dangerous to health. These are unpalatable subjects to be brought to the notice of the sanitary authority, and it is very possible that the parties who cause the nuisance, and whose property is liable to be taxed with the cost of constructing sewers or supplying a proper water supply, are members of the Sanitary Board, and actually the medical officer is reproved for attempting to conscientiously perform his duty.

The difference is apparent in England, where the recognized primary duty of the urban or rural sanitary authority is the health of the people, where the medical officer's report is read, duly discussed, and the suggestions offered for the improvement of the health of the district promptly acted upon.

What a disheartening prospect it is to a health officer to know that, time after time, his reports are unheeded, marked as read without being even looked at, and consigned to oblivion, and yet he is aware that nuisances dangerous to health exist in the midst of his district, that infectious diseases abound, and that, perhaps, he is on the eve of having to grapple with an outbreak of scarlatina, small-pox, or typhoid fever. There is no doubt much to discourage the sanitary officers from doing their duty fearlessly in Ireland, and to deter them from making painstaking reports; but still, notwithstanding these drawbacks, let them persevere and continue their efforts for the amelioration of the health of their districts, continuing to educate public opinion, and a time will come sooner or later when their efforts will be recognised, and they will reap a well-deserved reward.

There can be no doubt that the sanitary administration of districts (more especially in Ireland) in which the union medical officers act as medical officers of health, is very far inferior to that of districts which have secured, singly or in combination with others, the services of a single officer—of special qualifications for the post, at an adequate salary, and with a reasonably assured tenure of office. In England one of the main reasons why the Public Health Act is efficiently carried out, is the fact that the great majority of districts are now in combination, and are consequently able to command the services of a medical officer of health, at a fair remuneration, who does not practise his profession, whose duties are strictly limited to sanitary work, and who is consequently unfettered in his action and independent of the public around him. In Ireland, on the contrary, the dispensary or poor law medical officers are the medical officers of health, who receive a miserable dole of ten

or perhaps fifteen pounds a-year, as a medical journal aptly puts it, to hold their tongues and take no notice of dirt and disease within their districts. These dispensary doctors are generally the medical attendants of members of the boards of guardians, who very probably are owners of property in their respective districts, and it is obvious that sanitary work is neglected.

The indications are rapidly becoming numerous that the Local Government Board in Ireland will soon have seriously to take up the whole question of combinations of districts and unions for the appointment of a medical officer of health. It is impossible that the sanitary laws can be efficiently worked in Ireland under the existing system. In lieu of having six or more medical officers of health in each district, with a superintendent medical officer of health (who, by the bye, is, as a rule, an ornamental functionary); there should be one, and only one, medical officer of health, who should be a man free from the cares of practice, and whose pecuniary interests would not be perpetually at war with a due and fearless discharge of his duties. In Ireland, again, the efficient carrying out of the details of the working of the Public Health Act seems, in the majority of the districts, to be encumbered by a plurality of executive officers, whose duties appear not to be very clearly defined, and, as a consequence, red-tapeism is in the ascendant, and the least possible amount of sanitary work is got through in the year. There is first an official termed a sub-sanitary officer, next an executive sanitary officer, then a medical officer of health, and finally a superintendent medical officer of health. Surely Ireland ought to be a veritable land of health and happiness. It would be interesting to know what are the special duties appertaining to these various offices. In England one medical officer of health and one, at most two, inspectors of nuisances suffice (in the majority of districts) to carry out the provisions of the Public Health Act effectively.

I am informed, on reliable authority, that, in order to set the sanitary machine in motion, regarding the abatement of a nuisance, or other matter affecting the health of a district, each and every one of these officers has some little part to play, before the evil complained of can be remedied, and, as a consequence, it involves a period of weeks, months, and sometimes years, to carry out some trifling work of sanitation, which, in an English sanitary authority, would be effected in a few hours.

The dwellings of the poor in Ireland are a fruitful source of disseminating disease, over-crowded as they generally are, and neglected alike by the landlord and sanitary inspector.

It may be at once conceded that to abolish the one-roomed

cabins, and replace them by decent cottages, will be impracticable as a measure of instant sanitary reform. This improvement must be effected, but it will be a work of time; there is no reason, however, why the commencement of this great undertaking should be indefinitely postponed. In the townships around the City of Dublin the habitations of the poor are simply indescribable, and reflect discredit alike on the landlords of the soil, the intermediary cottage property owners, and, above all, on the sanitary authorities, and the wonder is that these districts are not perpetually a prey to some withering outbreak of infectious disease.

Fever in all its varied forms is one of the greatest scourges which affects the poor in Ireland, and in the vast majority of instances it is produced by palpable neglect of some one of the provisions of the Public Health Act. The disease spreads throughout an entire district, many deaths ensue, no inquiry is made, and after a while the epidemic subsides, until a fresh and far more serious outbreak arises; and then at last the authorities awaken, a neatly worded report is issued, stating that "fever has been prevalent throughout the district, but by no means to such an extent as to give rise to public uneasiness." The question naturally arises—Where does the fault lie? Are the people responsible for the accumulated filth amidst which they live? Are the landlords accountable, or is the Sanitary Authority blameable? The question seems not easy of solution in Ireland; but if there be a Public Health Act in force, why are its provisions not strictly and properly carried out? Of what utility is the Sanitary Board if its bye-laws are not put into execution? Are the Medical Officers of Health and Inspectors of Nuisances merely ornamental functionaries? It is surely possible that some machinery can be set in motion in Ireland as well as in England, to abolish filthy dens of fever and filth, to eradicate existing nuisances, to isolate cases of virulent infectious disease, to cleanse the bye lanes and alleys as well as the principal thoroughfares, to prevent the overcrowding of tenement houses, to level down the miserable and unsightly half-roofed cabins of the poor, and raise comfortable cottages in their stead; in fine, to educate the people into acts of cleanliness.

The defective state of the dwellings of the poorer classes in Ireland stands forth as a glaring disgrace to the landlords and sanitary authorities throughout the entire country. Cottages or cabins are built of unhewn stones without cement, looking as if they could scarcely hold together; the gaping chinks admitting every blast, the thatch gaping in some parts to admit the wind and wet; before the doors run open drains full of animal and

vegetable refuse, decomposing, and breeding disease around. Contiguous to the door the dung heap, on which every kind of filth is accumulated. Within this miserable dwelling, containing most probably only one room, are huddled together a family of perhaps a dozen souls, thankful that they have even an earthen floor to lie upon, and still there is a Public Health Act supposed to be in force in Ireland. The fault lies somewhere, and possibly it can be brought home to the door of the administration of the sanitary service in Ireland.

Dr. Laffan, in his Carmichael prize essay referring to the administration of the sanitary service in Ireland, remarks: "There is no use in disguising the fact that there is a direct antagonism between the interests and the duties of Irish sanitary officers. An independent discharge of his duties would place every dispensary officer at war with half his clientele: it would be too much to expect from human nature, that any man so circumstanced could discharge his duties properly. No class of men make more personal sacrifices for the public interest than the members of the medical profession, but there is however a limit to such sacrifice-making, and it is neither desirable nor proper to impose burdens which try our human nature too much. We therefore entirely disapprove of the arrangement which imposes sanitary duties on Irish dispensary officers." Further on Dr. Laffan says, "We deem an ex-officio system of appointments to any place or post open to grave practical objections, nobody will venture to deny that considerable special training is needed to produce a competent sanitary officer, indeed the ex-officio system renders this impossible. Another obstacle to sanitary work has been found in the nominal pay given to the staffs, no man receiving such paltry stipend could be reasonably expected to bestow that labour on the sanitary portion of his duties, which their onerous nature would require. There must be a clean sweep of our Irish system of sanitary organisation. Dispensary medical men should be relieved of functions, with which they never should have been entrusted." These sentiments I am sure will be approved by many here present, and the sooner the Local Government Board faces the question of combination of unions and districts for sanitary purposes the better. There must be only one medical officer of health to each union, whose duties will be strictly limited to sanitary work. He should be an officer specially trained, properly remunerated, and thus rendered independent and untrammelled in the discharge of his duties.

In the quarterly reports of the health of Ireland, the Registrar's notes are often interesting as showing the prevalence of disease, and the sanitary conditions under which the inhabitants of their respective districts are placed. Many refer to the

accumulation of manure and the existence of cesspools as causes of disease, more especially typhoid fever. For example, in one district 209 cases occurred, clearly traceable to water contaminated with dejecta from a typhoid patient, another registrar states that he has reported more than 400 nuisances during the past year and-a-half, but has not succeeded, save in one or two instances, in having them removed. Another registrar states that cesspits, with manure heaps in close proximity to dwelling houses, are the rule in his district, while cattle are kept in a great many houses, and the water supply is unfit for use, but, notwithstanding his reports, nothing is done to improve the condition of affairs. A medical officer of health writes to me that his district, so far as its sanitary condition is concerned, is in exactly the same state as it was ten years ago. No notice whatsoever is taken of his reports by the sanitary authority, and he is forced to the conclusion that it is only in the very distant future that any approach to sanitary reform will be attempted in his district, although it is a large and important one, he states that recently he had to treat some patients suffering from typhus fever, in a room about twelve feet square, where nine others slept during the night.

Another Medical officer of health states, in a recent letter, that the town and district where he resides, is visited frequently with typhus and typhoid fevers, which he attributes to the fact that the water in use for drinking purposes is "infamously bad." The supply is obtained in great part from open wells, which are entirely unprotected from contamination, and although he has time after time called the attention of his sanitary board to this defective water supply and other sanitary faults, yet nothing is done, and possibly this will be allowed to continue until the end of time. Probably Macaulay's New Zealander will see these works of public health commenced but not ended in Ireland. Hence it is evident that the duties of a sanitary officer in Ireland are of no ordinary character. On the one side he has an unwilling sanitary authority opposed to all measures of health reform, bitterly hostile to any sewage, water, or other scheme that may involve an expenditure from their incomes; and on the other side a disinclination on the part of the people to submit to sanitary legislation, and accustom themselves to habits of cleanliness.

The duties of health officers in England contrast with advantage when compared with the duties of health officers in Ireland, and, as a rule, the former officers find comparatively little difficulty in carrying out the provisions of the Public Health Act. Of course there are exceptions to every rule, and strenuous opposition is frequently offered to a sudden and

sweeping measure of sanitary reform, but generally speaking, the reports and suggestions of the medical officer of health are acted upon, and carried out without delay. This contrasts with the Irish health officer, who, when he earnestly and conscientiously performs his duty and attempts to improve the sanitary condition of his district, is blamed for his officiousness, and is given to understand that the less frequently he favours the Sanitary Committee with his reports the more will he rise in their estimation, and the greater will be his peace of mind. These gentlemen seem to forget that the first function of every health officer is to consider well how health may be saved, and what provisions are necessary for its protection, they seem to be unaware of the fact that his noble duty is to protect the health of every human being residing within his district from known sources of danger, and to advise to the best of his ability what steps and sanitary arrangements are to be carried out to prevent the outbreak of infectious disease.

It is generally admitted that the working of the Public Health Act in Ireland is impeded by the ignorance and incapacity of those who are called upon to carry out its provisions, yet there has been a decided improvement in some towns and districts during the last few years, and it is to be hoped that this improvement will continue and extend over the whole of the country. Until such time as Boards of Guardians, Town Councils, and Town Commissions begin to recognise the principle that the health of the people should stand pre-eminently first in the rota of local legislation, so long will the working of the Public Health Act in Ireland remain a dead letter, so long will the high rate of mortality exist throughout the country, and so long will fever and infectious disease stalk uninterruptedly throughout the urban and rural districts.

The enforced brevity of this paper precludes my discussing this question further, it is an extremely difficult one and not easy of solution in Ireland. Possibly, it may be from want of capital that sanitary reform is not carried out more vigorously in the unions and districts in this country. Still, the progress of civilization makes this question of sanitary reform every day more pressing, and local authorities are becoming forced to abandon the *laissez faire* principle, and to recognise their responsibilities as the guardians of the public health. Year by year improvements of a social and sanitary nature demand a supply of skilled knowledge for their most effective administration, and the legislative era of the sanitarian of thirty years ago has passed away. To help in the great problem of sanitary progress and reform is a high and a noble task, and it is one which above all others should be dear to the officers of health.

The fertile fields of this new land of loving labour lies before them in all its fruitful freshness, let them have the courage to claim possession of it in the name of a high and holy cause—the health and happiness of the Irish people.

Mr. H. H. COLLINS, F.R.I.B.A. (London), said it might be supposed from the observations that had been made, that the medical officers of health in London had quite an easy task as compared with that of the medical officers of health of Ireland, but he had thought the address of the President last night would quite have dissipated that impression. The truth was that there existed amongst the masses of the population a lamentable apathy with regard to sanitary matters, although during the last twenty-five years there had been enough books written on Sanitary questions to fill that building, and despite the fact that such men as their President, Mr. Edwin Chadwick, Dr. Cameron, and others had been pressing this matter upon the people at large, it was extraordinary how very little real interest the question had aroused. Only those who had to administer the laws relating to sanitary matters could understand or appreciate the difficulties experienced in carrying them out. If a person noticed a disagreeable odour in his house he usually sent for a plumber, who probably, from ignorance or design in endeavouring to rectify defects, made them worse. One of the main objects of this Association was to prevent unqualified persons from assuming duties and undertaking to carry out the enactments contained in Acts of Parliament without the least fitness for their position; and it offered by the most highly qualified examiners to ascertain whether inspectors had acquired sufficient knowledge to enable them to perform their different duties: and to supply them (if efficient) with a certificate, which would not be merely a written testimonial, but would represent that they had an absolute knowledge of the subjects they professed as connected with principles of Public Sanitation.

Corporations in large towns were beginning to see that sanitary efforts were in a great measure nugatory, unless they could embrace within their control the outlying districts, and in London it had long been felt that there should be no distinction between urban and rural sanitary authorities. He had long since come to the conclusion that to educate the people into a knowledge that the neglect of such matters as Dr. Flinn had so ably brought before them, meant the taking of so much money out of their pockets, was the best way to lead to the enforcement of these laws.

Dr. ALFRED CARPENTER (Croydon) wished to confine the discussion to the question raised by Dr. Flinn's paper—viz., the difficulty of getting the Public Health Acts carried out in Ireland. It should be borne in mind that the great object of the Sanitary Institute in

holding these Congresses was the education of the people; and when he looked at that meeting and saw the number of persons who were anxious to learn and know something of sanitary laws, he was satisfied that sanitary progress was being made in Ireland. If they could get a spirit of enquiry diffused among the people as to the advantages that followed the adoption of sanitary arrangements much more good would be done than by a process of compulsion. The principles of sanitary law would be carried out much better in those districts where the people knew that these laws were for their advantage, and where they felt it was to their interest to attend to them, than in districts where they were compulsory; and wherever there was that favourable idea of the law, no difficulty would be experienced in obtaining proper sanitary inspectors. No doubt there were places in England, as well as in Ireland, where there were difficulties experienced in carrying out the sanitary laws, but he did not think there were any similar cases to that referred to by Dr. Flinn, in which typhus fever patients were treated in a small room, wherein many others slept during the night. It was only by "pegging away," as President Lincoln said, that sanitary reformers could get attention paid to them, and he trusted the visit of the association to Ireland would arouse a spirit of enquiry which would lead to the disappearance of those evils which had been brought under notice.

Dr. CHARLES A. CAMERON (Dublin) thought they were much indebted to Dr. Flinn for bringing this matter before them. He was disposed to agree with the views of the author. So far as he could ascertain, it was the universal opinion of the officers of health themselves that the Public Health Acts were not being carried out at all in the rural districts of Ireland. Those officers were not able to carry out Acts, and the reports that they sent in were not attended to. He should not like to be considered as unpatriotic, and he hoped he should not be taken as abusing his fellow-countrymen, but boards of guardians, as a rule, were not at all anxious to carry out the Sanitary Acts. This was especially true in regard to water-supply, as he hoped to have an opportunity of showing in the geological section. A most appalling state of things existed in regard to the water-supply of the greater part of Ireland, and this arose from a disinclination to spend money. He could fully confirm the observations of Dr. Flinn, that sanitary administration was not properly carried out in many of the small towns in Ireland. In England most towns of 3,000 or 4,000 people would have a supply of water at high pressure, but few towns in Ireland of even 7,000 or 8,000 inhabitants had this. In an Irish town of 3,000 inhabitants they would probably find a magnificent organisation of town commissioners, town clerk, medical officer of health, inspector of nuisances, and other officers; but perhaps the revenue of this great organisation did not exceed £50 or £60 a year, and the whole of it must be expended in payment of officers, leaving nothing for the carrying out of sanitary works. One gentleman whom he knew bore the high-sounding title of "Superin-

tendent Medical Officer of Health," but had no one to superintend, and he had been promoted from the position of "Consulting Medical Officer of Health," which office also carried with it no duties. This gentleman had made no reports since his promotion, because his reports as consulting medical officer were not attended to. He (Dr. Cameron) thought they were greatly indebted to Dr. Flinn for bringing this subject before them.

Mr. R. O'BRIEN FURLONG (Dublin) expressed concurrence for the most part with the observations which had fallen from Dr. Flinn, but could not agree that the duties of English medical officers of health were so free from embarrassment as Dr. Flinn's observations might lead them to suppose. In Ireland the results of the Public Health Acts had not been so satisfactory as might have been expected, but then it must be remembered down to the year 1874, when Sir Michael Hicks-Beach introduced the Public Health (Ireland) Act, there was practically no sanitary organisation in the country; there was an utter want of control, and the sanitary state of the country was about as bad as bad could be. The Act of 1874 utilised the existing poor law machinery, and dispensary medical officers were appointed ex-officio medical officers of health for their respective districts. That did not meet with general approval, but upon the whole it was the best arrangement that could have been then made. Boards of Guardians were not doing all that could be desired, but they were doing infinitely more than had been done under the old system. He was not prepared to approve such a step as the abolition of the ex-officio sanitary functions of the dispensary medical officers. They could hardly obtain the services of an independent medical officer for each union, as Dr. Flinn proposed, for less than £800 a year, and as there were 163 unions in Ireland, the expense would render such a proposal almost impracticable. The State should appoint and pay six or eight superintendent medical officers of health, each of whom should reside in a central position in his district, and should be responsible to the Local Government Board for the carrying out of the sanitary laws in his district. These officers would no doubt support the local officers, and enforce the carrying out of their recommendations by the local boards. The Local Government Board of Ireland might well give its attention to the amalgamation of districts. It was unfortunate that there was not a health department attached to the Local Government Board for Ireland. There was a staff of medical inspectors attached to the English Board, whose duties were distinct from those of the general inspectors, and he could not see why they should not have a similar arrangement in Ireland. It was not correct to say that nothing was being done in the rural districts. Large, and annually increasing sums were being lent to the local bodies for sanitary improvements, but it must be remembered that the ratepayers elected the guardians, and the latter, who made the rates, would not be again returned if the rates were too high. Such congresses as these brought such

questions prominently before the people, who could then see that they might be saving their pockets at the expense of their health.

Surgeon-General A. C. C. DE RENZY, C.B. (Bray), was of opinion that there was a great mass of the population in this country, as in India, who believed that it was utter nonsense to suppose you could add one single hour to human life or avert one hour's sickness. This was, no doubt, the reason why Boards of Guardians were unwilling to spend money on sewerage and water supply, or anything of the kind. Members of the Sanitary Institute believed, and rightly, that death and disease could be largely controlled, but the mass of the people did not hold that view, and that was why Boards of Guardians and other similar authorities refused to allow the rates to bear the necessary expenditure. It was desirable, he thought, to retain the dispensary medical officers in the position they now occupied, for he believed they were performing a very useful function in educating Boards of Guardians in sanitary matters. By and by these Officers would succeed in making Guardians understand that sickness was to a large extent preventable, and that by taking proper measures the duration of human life might be lengthened; and there would then be less difficulty in inducing the local authorities to grant the necessary funds.

Sir ROBERT RAWLINSON, C.B. (President of the Congress) wished to make some remarks on the difference between Ireland and England in this matter. The Irish Act had, he believed, been adopted mainly from the English Public Health Act, but in Ireland the engineering officer stood *solus*, and had no staff like he himself had in England, and he assumed that the medical officer in Ireland stood in the same position as the engineering officer. In Ireland, expense must be considered; that he fully admitted. England was a very much richer country than Ireland, both geographically and geologically. Ireland had not underneath her surface the stores of riches that were to be found in England. Economy in sanitary works ought therefore to be striven for. There ought not to be extravagance in England, but wealth and extravagance could not in all cases be kept separate, and some works devised and executed by English municipal bodies were extravagant. Applications for sanitary works of an engineering character made to the Local Government Board came before him, and he had looked at some of them with a heartache when he saw that the estimates represented a sum of money greater than the rateable value of the district. Sometimes there were reasons, especially in growing places, for incurring a heavy expenditure, but if a similar amount of expenditure were sanctioned in Ireland it might amount to confiscation. In Ireland there should be men especially adapted for Irish work. Dr. Cameron had told them that in many towns of Ireland there was scarcely such a thing as a good water-supply, and probably if some great engineers were applied to they would recommend a reservoir, mains, and a distributing apparatus, all of a most expensive character. The first question in

Ireland should, however, not be how an extravagant work of that description could be done, but how in the roughest and readiest manner to be efficient, water could be brought into a district, if not in the most perfect manner, yet in a far better manner, than at present; and this could frequently be done at a cheap rate. Gas-pipes from two inches to one inch in diameter might be laid from mountain springs or lakes, and if there were a gravitating fall down to a town of 1,000 or 1,500 people, such pipes would bring in the twenty-four hours more water than would supply such a population if it were distributed properly, cheaply, and wisely. He had carried out works in England in such a manner that the poorest family could be supplied with as much pure water as could be required for the sum of ninepence per quarter.

Prof. F. DE CHAUMONT, M.D., F.R.S. (Southampton), agreed with Sir Robert Rawlinson, that Ireland would do well to take warning by the large expenditure incurred in England, in many cases unwisely; but in England they had been feeling their way, and Ireland could gain from their experience. One point which could not be dwelt upon too strongly was the necessity for medical officers of health being independent of the local bodies. If they had to deal with England only, he should say distinctly that the medical officers of health in any district ought to be prohibited from practising, and should receive an adequate salary accordingly; but there would be a difficulty in carrying out such a scheme in Ireland, on account of the smaller rateable value, though an extra charge upon the rates for such a purpose would not be money entirely lost, owing to the diminished expenditure in respect of poor houses and asylums, and, he hoped, of prisons.

The roseate view taken by Dr. Flinn of the working of the English Public Health Act was hardly borne out by experience, for in many cases where Boards of Guardians were the Sanitary authority, it was extremely difficult to get anything done.

Dr. EDGAR FLINN (Kingstown), in reply, justified by his own experience his assertion as to the working of the English Public Health Act, and maintained that the Sanitary laws would never be properly carried out in Ireland, until they had an independent medical officer of health, adequately remunerated, who could give all his time and attention to the duties of his office, without fear or favor. He thought that the discussion had shown that the time was opportune for ventilating this most important question, and he hoped that at no distant date a new and vigorous era would be initiated in the administration of the Public Health Act in Ireland; for truly (so far as his experience went) reform in this direction was urgently and imperatively needed throughout the entire country.

On "*The Public Health of Kingstown*," by J. BYRNE POWER, M.C.S.S., C.P.I., Physician, St. Michael's Hospital, Kingstown.

My duties as Medical Sanitary Officer have led me to investigate, as far as lay in my power, the sanitary condition of Kingstown. The Registrar-General's Returns pointed to two facts which seemed to me anomalous in such a town, *i.e.*, a sea-side resort for the well-to-do inhabitants of a large city. The points I noticed were, a very low birth-rate and a relatively high death-rate; I say relatively high, as I consider the death-rate excessive, taking into account the very favourable conditions, as to health, which ought to obtain in a town of this class. The results as to the births were particularly startling, as during the years 1882 and 1883 the deaths in the township exceeded the births by seven and twelve respectively. As bearing on this point, I have thought it well to compare the vital statistics of Blackpool—a seaside pleasure-resort near Liverpool, and in that respect comparable with those of Kingstown—for the census year 1881, and I find the following results:—

Blackpool birth-rate ...	...	30.6
Kingstown birth-rate ...	...	21.8
Blackpool death-rate ...	...	18.6
Kingstown death-rate...	...	19.2

So that, roughly speaking, we may say that for three children born at Blackpool, there are only two born at Kingstown. The Kingstown death-rate is not much in excess of that of Blackpool, but I regret to say that, in my opinion, the Kingstown death-rate always appears less than it ought to be, in consequence of the large number of the poorer inhabitants dying in the Rathdown workhouse, whose deaths are not registerable in Kingstown. Moreover, I will further on give my reasons for concluding that the population of Kingstown decreased considerably between the years 1880 and 1883. This decrease would cause the apparent death-rate to be lower than the real one, though of course it would affect the birth-rate in the opposite direction. My first object of inquiry was to ascertain if there was anything in the physical conditions of Kingstown to account for this abnormal state of affairs. The principal physical conditions affecting the public health of any community

are: climate, soil, water-supply, and drainage. I shall now proceed to consider the climate of Kingstown as indicated by mean temperature, range of temperature, direction of wind, and rainfall.

TABLE I.—Mean Temperature, Kingstown.

Year	January	February	March	April	May	June	July	August	September	October	November	December	Annual
1873	44.3	39.9	42.9	46.7	51.6	58.9	61.3	60.7	55.0	49.6	47.1	47.7	50.5
1874	44.3	44.0	46.9	50.8	52.0	56.6	62.6	59.8	57.2	51.7	48.2	39.2	51.1
1875	46.8	42.4	44.0	48.3	55.0	57.0	58.8	62.5	59.0	50.4	45.8	42.4	51.0
1876	44.6	43.8	41.1	46.4	50.2	56.5	61.9	60.4	55.1	53.7	46.8	45.5	50.5
1877	44.1	45.3	42.0	45.9	49.3	58.2	59.0	58.9	54.5	51.9	46.6	43.7	49.9
1878	43.5	44.5	44.7	47.6	53.0	57.9	61.4	60.7	57.2	52.6	39.8	35.1	49.8
1879	36.5	39.8	42.3	44.1	48.2	55.3	56.9	58.2	55.0	50.4	45.5	39.7	47.6
1880	40.2	46.1	46.7	48.5	52.1	57.2	59.5	62.1	60.4	52.9	46.2	44.0	51.3
Means	43.0	43.2	43.8	47.3	51.4	57.2	60.2	60.4	56.7	51.6	45.7	42.2	50.2

The mean temperature at Kingstown, given in Table I., is remarkably high. In Table II. will be found a comparison between the mean temperature at Kingstown during the winter months and at the different favourite winter health resorts in England and the Channel Islands for the years 1873-77.*

TABLE II.—Mean Temperature During Winter Months.

STATIONS.	Nov.	Dec.	Jan.	Feb.	March	Means
1873-7.	°	°	°	°	°	°
Scilly	50.1	47.1	47.8	46.9	47.5	47.9
Torquay	49.0	45.5	46.6	44.2	46.4	46.3
Penzance	47.6	45.3	45.9	45.0	45.3	45.8
Guernsey	48.4	44.4	45.3	43.4	43.3	45.0
Barnstaple	46.6	43.1	45.0	43.8	44.5	44.6
Kingstown	46.9	43.7	44.8	43.1	43.4	44.4
Ventnor	47.7	42.7	44.8	42.8	44.0	44.4
Llandudno	45.1	42.9	44.1	42.3	43.3	43.5
1874-7.						
Ramsgate	44.1	40.1	41.5	39.8	41.8	41.5
Hastings.....	44.1	39.7	41.6	40.0	40.8	41.2
Means.....	47.0	43.4	44.7	43.1	40.0	44.5

* All the meteorological data of stations in England and the Channel Islands contained in Tables II., IV., V., and IX., have been taken from a paper by John W. Tripe, Esq., M.D., published in the Quarterly Journal of the Meteorological Society for April, 1878. All the meteorological data of Kingstown are taken from a paper I published in the *Dublin Journal of Medical Science*, February, 1881. I have not considered it necessary, for the purpose of comparison, to continue the Tables down to the present date.

From this it will be seen, as regards mean temperature, that Kingstown occupies a position equal to that of Ventnor.

As regards range of temperature, it will be seen on reference to Table III. that the diurnal range of temperature at Kingstown during the whole year is remarkably small.

TABLE III.—Mean Diurnal Range of Temperature—Kingstown.

Year	January	February	March	April	May	June	July	August	September	October	November	December	Means
1873	7.8	7.6	8.0	8.9	8.8	10.5	10.7	9.7	10.9	10.2	7.2	6.1	8.9
1874	9.2	7.2	9.7	10.9	8.6	10.6	10.2	10.3	9.2	9.1	7.8	7.7	9.2
1875	7.2	6.4	6.5	9.4	11.5	10.7	10.0	9.0	9.3	10.8	7.3	5.7	8.6
1876	6.5	7.2	8.8	8.4	8.0	10.0	10.9	9.6	7.9	5.9	6.0	6.5	8.0
1877	8.8	8.2	8.5	6.5	7.4	9.8	9.9	8.4	8.4	9.3	8.2	7.6	8.4
1878	7.8	6.0	8.5	8.2	9.2	7.3	9.3	8.0	9.4	7.8	9.2	7.2	8.2
1879	6.4	6.7	11.3	9.2	11.8	12.0	10.9	13.0	12.0	10.0	7.0	10.7	10.1
1880	9.2	10.2	12.8	11.4	12.7	14.3	14.0	6.4	5.0	11.4	10.6	9.5	10.6
Means	7.9	7.4	9.3	9.1	9.7	10.6	10.7	9.3	9.0	9.3	7.9	7.6	8.9

This fact, as regards its bearings upon the public health, is of the greatest importance, for there is no doubt that great and sudden changes of temperature are very trying to most constitutions. On reference to Table IV., we find, as regards this important matter of daily range during the winter months, that Kingstown occupies a most favourable position when compared with the favourite winter health resorts in England and the Channel Islands, being only inferior in this respect to two stations—Scilly and Penzance.

TABLE IV.—Temperature. Mean Daily Range.

STATIONS.	Nov.	Dec.	Jan.	Feb.	March	Means
1873-77.	°	°	°	°	°	°
Scilly	4.9	6.1	6.3	5.4	7.1	6.0
Penzance	6.2	5.2	5.4	5.3	7.6	6.0
Kingstown.....	7.3	6.7	7.9	7.3	8.3	7.5
Guernsey	7.4	7.6	7.8	7.5	9.1	7.9
Ventnor	8.7	6.7	7.0	7.7	9.9	8.0
Torquay	9.3	9.0	8.2	7.6	10.1	8.8
Llandudno.....	8.6	8.0	10.1	9.2	11.3	9.5
Barnstaple.....	10.1	9.1	9.4	9.0	11.1	9.8
1874-77.						
Hastings.....	8.9	6.3	7.4	7.8	10.4	8.1
Ramsgate	9.8	7.9	10.2	8.3	11.8	9.6
Means.....	8.1	7.3	8.0	7.5	9.7	8.1

TABLE V.—*Temperature. Monthly Range.*

STATIONS.	Nov.	Dec.	Jan.	Feb.	March	Means
1873-77.	°	°	°	°	°	°
Scilly	18.5	18.5	18.2	18.0	20.5	18.7
Penzance	23.2	21.7	18.1	21.0	22.4	21.3
Guernsey	23.7	24.2	22.2	22.1	25.8	23.6
Kingstown*	23.8	27.14	24.8	24.0	25.4	25.1
Ventnor	28.7	25.2	21.5	23.0	27.7	25.2
Torquay	27.2	26.2	23.0	24.7	25.4	25.3
Llandudno	29.3	27.0	23.5	28.5	23.1	26.3
Barnstaple	31.8	29.8	28.1	25.0	30.3	29.0
1874-77.						
Hastings	29.4	26.8	26.9	26.3	29.5	27.8
Ramsgate	32.3	32.3	32.6	30.7	28.9	31.4

In Table V. I have compared Kingstown with the above-named English and Channel Island stations as regards monthly range of temperature, from which it will be seen that Kingstown enjoys an advantage in this respect over all the stations in England excepting Penzance.

As showing the absence of extremes of low temperature during the winter months at Kingstown the following particulars are worthy of note:—During the severe frost of December, 1879, the thermometer descended as low as 22.6° at Torquay, 22° at Ventnor, 20.9° at Ramsgate, 19° at Bournemouth and Eastbourne, and 17.6° at Hastings, while at Kingstown and Llandudno it only reached 23°. During the same month the thermometer stood below 32° on 24 days at Ramsgate, on 21 days at Hastings, on 20 days at Eastbourne, and on 19 days at Torquay and Bournemouth, while it only fell below 32° on 12 days at Kingstown, on 11 days at Ventnor, and on 10 days at Llandudno.†

We next come to consider the subject of the direction of the wind; and for this purpose I have compiled Table VI., giving the number of days in each month from January, 1873, to December, 1880, upon which the wind, at a fixed hour each day, blew in a certain direction at Kingstown. In constructing this Table I have considered it well to distinguish the land from the sea breezes, or, in other words, the westerly from the

* The Monthly Ranges for Kingstown are calculated for the years 1876-80, and are therefore not strictly comparable with those for the years 1873-77.

† On the Frost of December, 1879, over the British Isles. By William Marriott, F.R.Met.Soc. Quarterly Journal of the Meteorological Society, April, 1880.

easterly winds, as the distinction may have an important influence on the public health.

TABLE VI.—*Direction of Wind at Kingstown for Eight Years, 1873-80. Number of days it blew at 11 a.m., or at 1.30 p.m. in certain directions.*

MONTHS	Total Sea Breezes	N.	SEA BREEZES			S.	LAND BREEZES			Total Land Breezes	CALMS
			N.E.	E.	S.E.		S.W.	W.	N.W.		
January	38	8	1	22	15	86	8	100	4	112	4
February	52	16	1	23	23	48	4	74	13	91	2
March	86	24	13	47	26	33	4	84	17	105	5
April	83	37	11	52	20	54	5	44	7	56	1
May	105	37	9	73	23	35	7	53	10	70	1
June	81	21	9	43	29	63	12	53	12	77	8
July	63	23	2	36	30	39	5	89	16	110	1
August	91	12	9	59	23	47	3	84	11	98	0
September	62	18	7	37	18	44	10	75	17	102	5
October	60	26	6	33	21	45	7	88	19	114	4
November	56	20	10	34	12	44	5	91	19	115	5
December	32	8	2	18	12	46	12	132	10	154	7

On looking over this Table the first point that strikes us is the great prevalence of westerly and southerly winds, which is in accordance with the result of all observations in these countries. The easterly winds, proverbially harsh in these islands, fortunately for us occur in minimal frequency during the two coldest months of the year—January and December—not attaining their maximum at Kingstown until so late as the month of May, in fact, during the summer months they are vastly more frequent than during the winter. Even assuming that the east wind is pernicious, the fact of its prevalence during the early summer months—the portion of the year in other respects most favourable to health—might lead us to anticipate that its effect would be but slightly traceable in the death-rate; and this we find to be the case on reference to Table VII., which gives the number of deaths from all causes, and also those from diseases of the respiratory organs and phthisis, for four weeks in each month from January, 1873, to December, 1880. This is illustrated by Diagrams I. and II.

DIAGRAM I.—Showing Average Number of Deaths in Kingstown from all Causes, and from Diseases of the Respiratory Organs and Phthisis, for four weeks in each month, from January, 1873, to December, 1880.

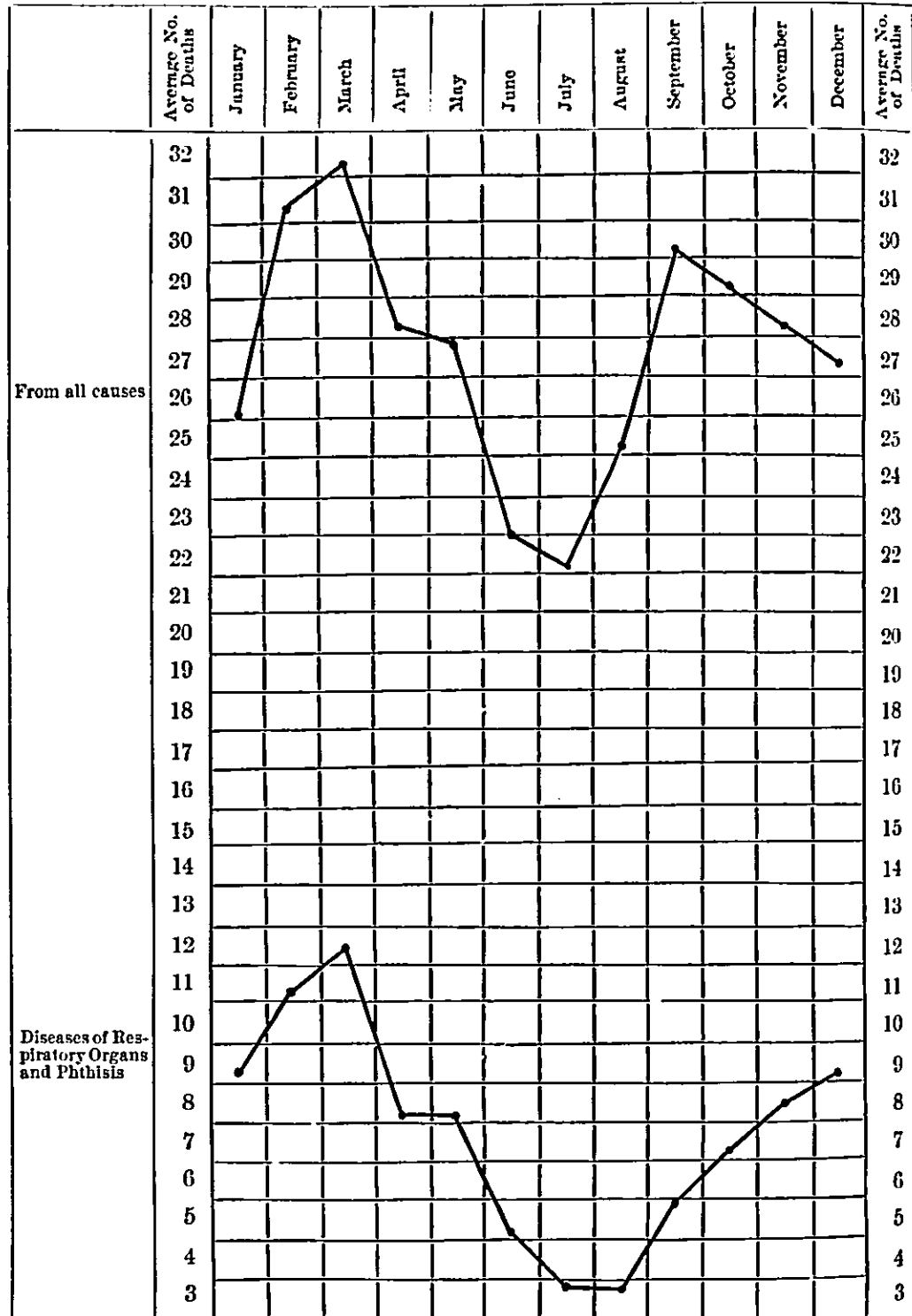


DIAGRAM II.—Showing Prevalence of Easterly Winds at Kingstown, during Eight Years, from 1873 to 1880.

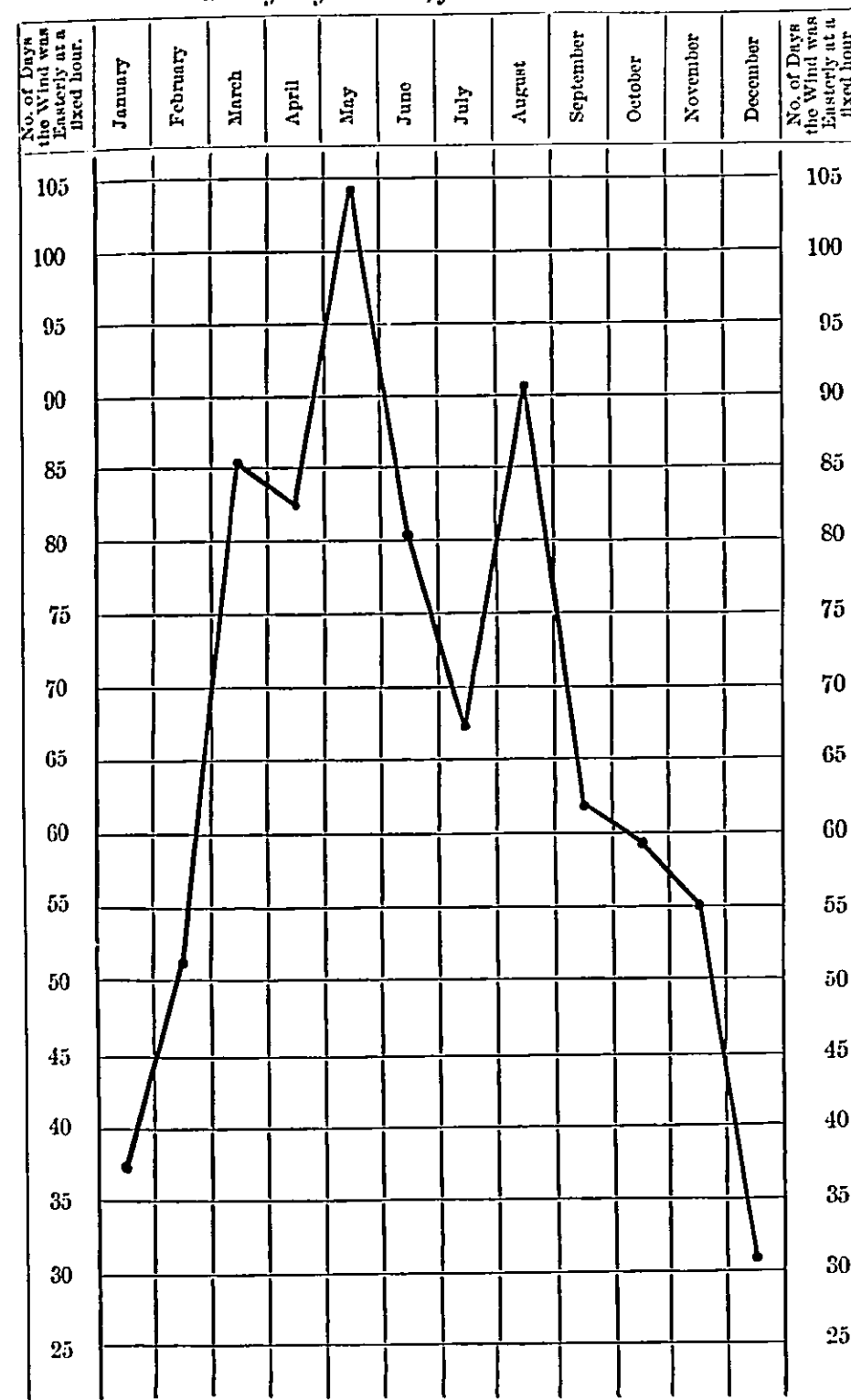


TABLE VII.* Number of Deaths in Kingstown from all causes for four weeks in each month, from January, 1873, to December, 1880.

Year	January	February	March	April	May	June	July	August	September	October	November	December
1873	16	14	35	23	14	22	14	15	30	26	22	21
1874	21	35	30	28	14	18	19	23	23	20	23	28
1875	25	25	18	26	21	15	23	25	36	30	26	27
1876	23	31	33	29	22	21	27	19	33	30	41	32
1877	36	37	49	30	37	26	23	23	20	32	26	22
1878	25	35	23	25	27	22	23	40	27	40	26	32
1879	39	43	31	37	50	33	29	20	23	39	22	27
1880	23	32	41	28	39	29	21	40	53	21	40	31
Average	26.0	31.5	32.5	28.2	28.0	23.2	22.4	25.6	30.6	29.7	28.2	27.5

Deaths from Diseases of Respiratory Organs and Phthisis for four weeks in each month, from January, 1873, to December, 1880.

Year	January	February	March	April	May	June	July	August	September	October	November	December
1873	8	5	16	6	2	3	5	3	6	6	4	5
1874	8	11	9	5	4	5	2	3	3	4	5	10
1875	9	13	7	11	3	3	2	1	7	3	8	6
1876	8	13	16	12	7	4	3	2	5	4	9	10
1877	14	14	22	12	23	8	7	6	5	6	10	7
1878	13	11	7	4	8	4	5	0	3	9	8	16
1879	10	18	12	10	12	12	4	5	8	14	7	11
1880	5	7	11	5	9	2	3	10	10	11	14	7
Average	9.4	11.5	12.5	8.1	8.5	5.1	3.9	3.7	5.9	7.1	8.1	9.0

As regards rainfall, Table VIII. gives the monthly rainfall at Kingstown, from the year 1873 to 1880.

TABLE VIII.—Rainfall in inches—Kingstown.

Year	January	February	March	April	May	June	July	August	September	October	November	December	Yearly Rainfall
1873	3.51	0.66	2.90	0.55	1.12	0.68	3.18	3.93	2.17	2.43	1.39	0.50	23.02
1874	2.03	2.93	0.68	1.11	1.45	0.99	2.41	4.52	1.86	2.55	3.69	3.68	27.90
1875	3.47	1.93	0.99	0.98	1.17	2.39	2.18	1.53	3.33	7.13	3.68	1.08	29.86
1876	0.34	3.13	2.05	1.74	0.67	1.55	0.82	2.56	3.05	4.77	4.54	8.09	33.31
1877	5.02	1.11	2.67	5.02	1.92	1.18	2.97	3.91	2.00	2.11	1.97	2.08	31.96
1878	1.97	1.57	1.02	1.78	4.70	3.29	0.44	6.49	1.92	1.79	0.86	1.47	27.30
1879	2.16	3.86	1.76	2.03	2.03	4.59	3.35	3.06	2.06	1.26	1.41	1.10	28.67
1880†	0.80	3.08	3.54	1.82	0.70	2.34	7.18	1.73	3.30	6.36	2.93	3.35	37.13
Means	2.41	2.28	1.95	1.88	1.72	2.13	2.82	3.47	2.46	3.55	2.56	2.67	29.89

* This Table has been compiled from the official monthly returns, kindly placed at my disposal by the present Registrar-General.
 † The rainfall at Kingstown during 1880 was excessive. The greatest

It will be seen that the wettest of those years at Kingstown was 1880, in which 37.13 inches fell; the driest being 1873, in which 23.02 inches fell. The two wettest months during those years were August and October. The two driest months at Kingstown were April and May. The greatest monthly rainfall at Kingstown was that of December, 1876, amounting to 8.09 inches; the smallest that of January, 1876, being only 0.34 inch.

In Table IX. I have compared the average rainfall at Kingstown during the winter months with that at the above-named English stations, for the years 1873-77. From this it will be seen that the rainfall at Kingstown during the winter is considerably less than that at any one of those stations, and amounts to little more than half that at Penzance.

TABLE IX.—Monthly Rainfall.

STATIONS.	Nov.	Dec.	Jan.	Feb.	March.	Totals.
1873-77.	In.	In.	In.	In.	In.	In.
Penzance	5.04	6.14	5.97	3.53	2.84	23.52
Guernsey	5.52	5.84	3.96	2.74	2.34	20.40
Barnstaple	3.97	4.37	4.89	2.54	2.63	18.45
Torquay	4.48	4.31	4.37	2.99	2.13	18.28
Scilly	4.12	4.98	3.92	2.13	1.98	17.13
Llandudno	4.24	2.86	4.04	2.69	2.13	15.96
Ventnor	3.89	3.01	3.84	2.41	1.87	15.02
Hastings	3.90	3.60	4.08	2.24	2.06	15.88
Ramsgate	3.82	3.12	3.12	2.19	2.11	14.36
Kingstown	2.97	3.09	2.93	1.94	1.76	12.69
Means	4.19	4.13	4.11	2.44	2.19	17.10

This is as might be expected, for the rain-clouds from the Atlantic borne to us and to other stations on the east coast of Ireland by the prevailing westerly and southerly winds are deprived of much of their moisture before they reach us by contact with the high land over which they pass, whereas at stations situated about the south-westerly extremity of England the rain-clouds are there first tapped by the land, and discharge a great deal of their rain on the spot.

I think I have now shown that the climatic conditions under which we live at Kingstown are favourable to health, and the comparison of mean temperature, range of temperature, and

annual rainfall at Dublin, of which I can find a record, was that of 1846, amounting to 36.11 inches. See paper on the Meteorology of Ireland, by Rev. H. Lloyd. Transactions of the Royal Irish Academy, Vol. XXII., p. 472.

rainfall, in Tables II., IV., V., and IX. shows its superiority in these respects to some of the most favoured English health resorts.

As regards soil, the site upon which Kingstown is built is usually stated to be granitic, which, according to the best authorities, is most favourable to health. It is to be observed however, that though the site of Kingstown is granitic, geologically speaking, a large part of the town is built upon an alluvial deposit, in some places attaining a depth of fifty feet, occupying an extensive depression in the granite, extending from Wellington Street westward as far as Monkstown Church, and from the sea inland as far as Monkstown Avenue. The escarpment of this formation may be seen behind the gas-works at Dunleary. Some of the worst slums of Kingstown are built on this site, including a locality rejoicing in the characteristic name of "Pig-bank." The deposit consists mainly of limestone gravel, a soil most favourable to health; but until recent improvements in the sewerage of the township, this region was traversed by two rivulets laden with sewerage matters, known as Sallynoggen and Stradbroke streams. These form a junction in the immediate neighbourhood of Juggy's Well, a water-source much affected by the lower classes of Kingstown on account of its supposed purity. I find, on reference to a map, prepared by Mr. Andrew Pallas, C.E., upon which he noted the cases of cholera occurring during the epidemic of 1866, that 50 per cent. of all the cases in the township occurred in this limited area.* Since then the sewerage of this district and of all Kingstown has been vastly improved. The Vartry water-supply of Kingstown is admirable. Thus all the physical conditions are favourable, the climate, soil, water-supply, and sewerage being good. The unsatisfactory state of our vital statistics must, therefore, be due to some shortcomings in the social or economic conditions of the township. On proceeding to examine the township with some care, the first thing that struck me was the number and wretchedness of what I may call the slums—miserable courts and rows of wretched hovels, in which a healthy or even decent life is well-nigh impossible. These are, for the most part, hidden from view by dwellings of a more respectable character, being, in many cases, erected in what were formerly the yards or gardens belonging to the houses which conceal them, so that all seems prosperous enough to the casual observer. The number of such hovels and of their inhabitants indicates a proletariat out of all proportion to the possibility of employment in such a town. I have ob-

* I have to thank Mr. Doyle, our present town-surveyor, for lending me this map and giving me valuable information as to the extent of this gravel deposit.

tained from our sub-sanitary officer a return giving particulars as to these dwellings and their inhabitants in Kingstown, and, through the kindness of Mr. Drury, similar ones for the neighbouring township of Rathmines, all of which I have thrown into a tabular form.

TABLE X.—Particulars as to Cabins, Tenement-houses and their inhabitants in the Kingstown and Rathmines Townships.

KINGSTOWN.							REMARKS.
CLASS.	Total No. of houses of each Class.	No. of houses of each Class unoccupied.	No. of houses of each Class occupied.	Total No. of rooms in each Class occupied.	Total No. of inhabitants in each Class.	Average No. of inhabitants per room.	
A	437	65	372	372	1178	3.17	Class A, houses of one room each, under £2 valuation. Class B, houses of two rooms each, under £3 valuation. Class C, houses of more than two rooms let in tenements.*
B	751	58	696	1392	2734	1.96	
C	234	Rooms 84	234	988	2130	1.86	
Totals	1427	123	1304	2756	6042	2.33	
RATHMINES.							REMARKS.
CLASS.	Total No. of houses of each Class.	No. of houses of each Class unoccupied.	No. of houses of each Class occupied.	Total No. of rooms in each Class occupied.	Total No. of inhabitants in each Class.	Average No. of inhabitants per room.	
A	45	Class not given in Returns.	45	45	153	3.40	Class A, houses of one room each. Class B, houses of two rooms each.† Class C, houses of more than two rooms let in tenements.
B	215		215	430	981	2.30	
C	285		285	1188	2328	1.95	
Totals	553	8	545	1663	3462	2.55	

From this table it will be seen that the population inhabiting these dwellings in Kingstown amounts to 6,042, out of an entire population of 19,628 (census, 1881)—roughly speaking, one-third, whereas Rathmines, with a total population of 24,245, has only 3,462 inhabiting such dwellings, amounting only to one-seventh. Such a number of persons in Kingstown con-

* There are fortunately only about 60 tenement houses in Kingstown. They are mostly small, none being more than two stories high, generally without a basement.

† The Rathmines valuations have not been obtained. I am informed that some of the two-room cottages are of a superior class, valuation as high as £10.

stantly on the verge of pauperism is, I believe, completely abnormal even in Ireland, and makes our township extremely sensitive to the influence of "bad years." The year 1881 strikingly illustrates this. The number of persons from Kingstown relieved at the Rathdown Union in 1880 was 796, while in 1881 it rose to 1,743, the reason being that owing to agrarian trouble, agricultural distress, and consequent financial depression, the number of visitors to Kingstown was greatly lessened. This is shown by the fact that the number of unoccupied houses valued at £20 and upwards was 100 in 1880, while it rose to 115 in 1881, and continued to increase until it amounted to 160 in 1883. In the better circumstanced township of Rathmines this depression was scarcely noticeable; the number of persons from Rathmines relieved in the South Dublin Union in 1880 was 266, while in 1881 it rose only to 290, showing a very small increase. The number of these wretched dwellings and of their inhabitants in Kingstown is easily accounted for by a glance at the history of the township. Kingstown, though now affording little employment, was once a place of busy industry. In 1816 Dunleary was a little fishing village, when the harbour now called Kingstown Harbour was commenced—a vast work which gave employment for many a year to a great number of men. In 1834 the Kingstown Railway—the second line constructed in the United Kingdom—was opened, and the town entered on a career of rapid expansion. The Atmospheric Railway to Dalkey was opened in 1843, and the town continued to increase in size rapidly up to 1871. From 1871 to 1880 the increase seems to have been very slow, and from the latter date it has been on the decline, as I intend to show. During all these years Kingstown was a busy place, affording constant employment to an army of artisans and labourers, to accommodate whom the cabins of which I have been speaking were originally built. Kingstown is not now a place in which any large number of persons can find employment. The small fishing industry it once possessed is nearly extinct. Almost the sole occupation the town affords is jobbing, casual employment in connection with the maintenance and repair of the houses of the well-to-do, eked out by assistance from charitable societies and public relief; this, with the more miserable resource of begging, supports most of the inhabitants of these wretched dwellings. On the completion of the harbour, about 1860, some of the unemployed must have left the township, for I find by the Registrar-General's Returns that in the decade 1861-71, the increase in the number of inhabited houses was 405, while the increase in the population during the same period was only 360. The 405 new houses being of a superior class, occupied by

families which we cannot estimate at a lower average than five persons each, indicates an increase of the well-to-do population vastly in excess of the increase in the entire population, which is only 360, showing a corresponding decrease in the working classes. Thus Kingstown presents some of the worst features of a town of decaying industry, crumbling hovels, and an undue proportion of perhaps the most helpless class in the community, worn-out workmen, too old to seek employment elsewhere, and clinging to the spot which once afforded them the means of comfortable existence. To these conditions we owe our low birth-rate, relatively high death-rate, and large admission into the Union Workhouse. These conditions have, I believe, continued more or less for the last fourteen or fifteen years, the ill growing with terrible rapidity since the troubles of 1881. This is shown by the increase in the number of unoccupied houses of the better class as already mentioned. This falling off and the consequent want of employment was followed by an increase in the number of unoccupied cabins, which in 1882 was only 20, while at present it amounts to 123, as shown by Table X. This increase in the number of unoccupied houses points conclusively to a corresponding falling off in the population. Moreover, I find on reference to the Registrar-General's Returns that the number of births registered within the township decreased from 463 in 1880 to 401 in 1882, representing a decrease of 13 per cent. in the breeding population, which, when taken with a corresponding decreased number of deaths, proves, in my opinion, a considerable falling off in the entire population. At first I believed that improved sanitation, and especially improvement in the dwellings of the poor, would remedy all the ills existing in our township; but further examination has convinced me that these measures, however desirable in themselves, cannot be expected to effect a cure of the disease which is chronic, and I almost fear hopeless—poverty.

On "The Insanitary State of Small Irish Towns," by J. WYCLIFFE-JONES, Surgeon-Major in Medical Charge of H.M.'s Troops at Naas.

The deplorably insanitary condition of several small Irish country towns, in which, during various periods of my service at home it has been my lot to be stationed in medical charge of H.M.'s Troops, has impressed me so forcibly that I feel

moved to submit a brief paper upon the subject to the Congress.

The importance of the subject would merit far wider treatment than I can give to it. But the fact that the statistics available deal with the sickness and mortality of small towns, only as they form a part of a large rural district, precludes the possibility of fixing the amount of sickness and mortality chargeable to the town itself, apart from its surrounding rural district.

I feel strongly convinced that the death-rate must be high in many towns I have known; yet upon an examination of the statistics of the area into which such towns were collated I have been astonished to discover a very low rate of sickness and death.

This statistical imperfection has a further important bearing: I cannot, in justice, condemn the condition of things in any one town as exceeding, in evil case, those of any other; for, again, I am unable to prove my case. For instance, although the insanitary state of Naas, my present station, is so bad, so deplorably bad, that in certain portions of the town every essential for healthy life is absent, I cannot state from personal observation, nor can I prove by figures that its condition is in any degree worse than that of many other towns I have formerly resided in. I must therefore be content to furnish a brief epitome of the results of several years' observations:—dividing these under the several heads of

- (1.) Overcrowding.
- (2.) Particular descriptions of dwellings, and rent.
- (3.) Sewerage and conservancy.
- (4.) Water supply.
- (5.) Ablution.
- (6.) General habits and state of the people, and intemperance.

Overcrowding.—A traveller on foot, approaching an Irish country town, who, forsaking the high road, takes the field-paths, will be much struck by the numerous little groups of workmen who meet or overtake him, as the case may be, all wending their weary way towards the one goal—the town: these are farm labourers who have walked out two to four miles to their work in the early morn, and are now—having neither lot nor part in the land upon which they have expended a day's toil—plodding their way home: to what kind of a home we shall see anon.

A time there was, as I am informed, when these men, their wives and children, resided in the country, surrounded by a bright atmosphere of rural industry and humble plenty. This

no longer obtains, and so rural families who have not emigrated, are compelled to seek shelter in the nearest town; in which they are shamefully ill-lodged, and where they, too often, must submit to extortion. And further, where, from the want of employment, idle and many vicious habits are quickly learned.

Adhering to my text, *Overcrowding*, I will supply a few salient facts. In a most wretched, half-ruinous, two-storied house, containing four simply shocking rooms, I found four families resident—in all, twenty-two souls. My visit—made for the dispensary physician, absent on leave—had for its object the relief of a poor woman in her confinement; and this took place in one of the smallest and worst rooms in this terrible abode, and under such circumstances of appalling squalor and deficiency as made her subsequent recovery a matter of astonishment to me. Another instance: to everyone who has any knowledge of Ireland, the form of the Irish cabin will be familiar; the outer room, or kitchen, and the inner room—“the room” *par excellence*; both floors are clay usually, and the levels lower than that of the street. In winter damp prevails, but one fire-place is provided, and this utterly devoid of any description of grate. Let us, then, imagine two to three families huddled together upon the two floors.

Other instances will be interpolated between particular descriptions of dwellings, as an essential to that division of the subject, but I am convinced that extreme and cruel overcrowding is a wide-spread sin of Irish country towns.

Particular Descriptions of Dwellings.—I almost despair of being able to convey even a faint idea of an Irish country-town dwelling to those of my hearers who belong to the eastern shore of the Irish sea. Accustomed as they are to the bright red-tiled kitchen floors, the oven-and-boiler range, the clean boarded bed-room floors—of the English workman's home; I scarcely expect credence from them for the following descriptions: but my Irish hearers will, without difficulty, supply parallels to every instance I submit.

The Irish dwelling is of two classes: the one-storied clay-floored cabin—I cannot with truth use the cheerful English word “cottage” very often in Ireland, cottages are far too scarce—and the two or more storied house.

Now I wish to state at once that I believe that these latter will be usually found to furnish instances of a lower degree of insanitation than even the cabin—vile though it be—and this seems partly to be the result of a belief in the unlimited capacity of any dwelling that possesses several floors. Even though the ground floor be rather crowded by the wretched “deputy sub-assistant landlord,” his family and guests, there is

always "*plinty* of room up-stairs," or rather, "above in the rooms"—"above" conveying to the Irish imagination an almost unlimited degree of storied elevation, provided that the two, four, or sixpence per night be forthcoming. Again, too, the police cannot so easily penetrate, nor can the members of that stalwart corps feel very safe upon the crazy stairs.

The worst descriptions of dwellings are usually to be found hid away in lanes and courts behind the main streets.

I will endeavour to describe a small court of dwellings very recently visited. The entrance is in a narrow lane of cabins, and this opens to the main street of the town. Picture then a horrible little courtyard some 50 ft. \times 28 ft. almost completely enclosed by small dwellings; the ashpits, pigstyes, and back yards of the front row of hovels forming the only prospect possible for those inside the court. The entire block of building does not occupy, to the best of my judgment, nearly one rood of land, nay, indeed, not one-sixth of an acre. Upon this site are built thirteen simply frightful dens, all have damp or clay floors; pools of green and black water lie all around, black typhoid mud, and festering manure in abundance. Some fifty-five to sixty souls live in this court, and many pigs are kept. I measured several houses, and append a few results. No. 1 house, $5.7 \times 14.2 \times 6.9 =$ cubic ft. less than 588; four souls live here. No. 2, $15.7 \times 12 \times 9.6 =$ cubic ft. less than 1,800; five souls resident. No. 3, $15.7 \times 10.8 \times 9.6 =$ cubic ft. less than 1,500, and eight souls resident. In the first about 100 cubic ft. of foul damp air could be enjoyed, in the second about 300, if no lodgers come for the night, in the third about 142. For the worst description of dwelling 1s. to 1s. 6d. per week is paid, but 2s. 6d., 2s. 8d., and 3s. is very commonly demanded even for cabins, which can, with truth, be described as "unfit for human habitation." A very wide field of observation, both in Europe and in India, has not furnished me with any parallel to all this. In no country on the globe has human misery reached so low a degree of degradation. Picture what life must be in such dwellings, and be well assured that I furnish no isolated instance, but a true representation of what is all but universal in Irish country towns.

The worst dwellings are to be found in towns owned by a number of small proprietors. In these, sub-letting of even fairly good houses is carried to a ludicrous degree. A bachelor friend of mine once obtained, with difficulty, in a small country town, two furnished rooms in the same house; but he rented his sitting-room from one landlord, and his bedroom from another. Again, in the instance mentioned of the house in which I found twenty-two souls, two or three landlords were part owners, and

the third, who occupied one room—i.e., himself and family—drew 8s. 6d. per week from three sets of squalid lodgers. The house pays to various owners about £34 a year, when quite full. I would be sorry to give that sum for the materials of which it is built.

Sewerage and System of Conservancy.—My experience leads me to the strong belief that under this head every sanitary rule is almost universally violated. Having regard to the towns at large I am unable to remember one where an efficient system of drainage and sewerage exists.

Latrines, &c.—Then, as to latrine accommodation, it is notorious that none whatever is provided for a very large number of the humbler dwellings in Irish towns; while even houses of a better class are vilely provided. The state of deplorable degradation engendered cannot be exaggerated. Connected with this subject I must speak of the intense nuisance created in the horrible labyrinth of back yards seldom absent in Ireland. Here pigs and horses are kept; often, too, no back-lane entrance exists, and at potato sowing time I have often seen two or three cart-loads of festering black typhoid sludge and manure conveyed through, not one or two, but *many* dwellings, and thrown in a large heap upon the main street, until carted away; the unspeakable stench at the back, inside, and in front of the house may be imagined.

I would say a word about slaughter-houses, and shall describe one. In a minute yard, entirely hemmed in by buildings, whose back windows open upon it, hundreds of sheep and cattle have during many years been slaughtered; no back lane gate exists, the beasts are driven in to their death through the street door. A slight whiff from this fearful den has sufficed to produce in myself severe nausea. This is a fair sample, for all I have seen are very similar.

Water supply and means of ablution. The source is usually pump wells, and the quality is not prominently bad, but the quantity is often scanty, and always insufficient, for those living far from a pump, hand-carriage being the rule, a cruel labour generally imposed upon the young.

The means of ablution are of the humblest, dirty water is thrown into the kennels, and what with overcrowding and clay floors, extreme personal uncleanness prevails.

Habits of the people and intemperance. With such surroundings no one will marvel to hear that excessive drinking is too often practised in Irish towns, by those housed as described; indeed, poverty or want of credit are the only checks to this vice, and it is so notorious and deplorable as to need no further notice.

I fear being an undue trespasser upon your notice and time, and I therefore conclude with an earnest desire that a root and branch reform may, ere long, be applied to this wide-spread and destructive evil.

SIR ROBERT RAWLINSON, C.B. (President of the Congress), said the condition of these towns, bad as it seemed to be, could have been paralleled some years ago in parts of England and Scotland, and in some cases it was not very much better even now. To remedy this state of things money must be expended, and there should be local regulations to prevent overcrowding. The progress of modern sanitary improvement took merchants and the better class tradesmen into the country, and the houses they left degenerated into tenement-houses, for which they were not fitted; but they were divided and sub-divided, the windows got broken, there was no privy accommodation, no water-supply, and all other sanitary arrangements were defective. An artisan from the country, with probably a good constitution, accompanied by his pure-minded wife and two young children, found himself obliged to live in one of these places, where he soon perished from fever, the wife and children were relieved by the parish; but the poor wife, while still young, gradually degenerated into the lowest habits. All these evils resulted from the want of proper house accommodation, and they in England had no desire to make out that those in Ireland were worse than other people.

DR. ALFRED CARPENTER (Croydon) said the Association had thought the question of the housing of the poor was a very proper one to be brought before this Congress. He had heard the paper read with some degree of pain, because it described a state of affairs which was absolutely unnatural. He was almost afraid to say to an Irish audience all that he felt upon a paper of the kind, because it was so difficult to avoid touching upon questions connected with the land and the duties of its owners towards the people; but he could not help saying that any landlord who allowed his cottages to remain in such a condition as that described was failing in his duty to himself, his family, and to the nation at large. The mischief which arose from such a state of things eventually struck home to the landlord to a dead certainty. The establishment of the owner or some other of the large residences near to, or it might be at a distance from such a neighbourhood, were sooner or later struck by a shaft from one of these cabins, perhaps the nearest and dearest might be carried off by some disease the germs of which had been generated in wretched dwellings of this class. Providence visited such neglect upon the responsible parties either in loss of health, of that which was dearer, or of life itself.

Surgeon-Major HAMILTON (Dublin) described the sad condition of

certain places at which lived the families of soldiers *married without leave*, and mentioned a case of overcrowding near Portobello Barracks, in which a man, his wife, and seven children lived in one small damp room; though, he added, that matters had greatly improved since he entered the service some years before.

MR. BRUEN (Carlow) said that no doubt such things as were described in the paper were to be found in some Irish towns, but it was going too far to say that this condition of the houses was all but universal. In the towns of which he had knowledge it would be difficult to pick out such cases as had been described. How was such a state of things to be ameliorated? Parliament had made provision to enable owners to borrow money to erect labourers' cottages, but the provisions of the Act were only applicable to country parts, and he suggested that they should be extended to the towns.

DR. T. W. GRIMSHAW, President of the Section (Registrar-General Ireland), agreed with Mr. Bruen that there were many places where the state of things described did not exist; but on the other hand, there were many places where it did prevail, especially in small towns. Mud cabins were to be found in some parts of the North of Ireland. But he believed that in Ireland generally they were improving.

SURGEON-MAJOR J. WYCLIFFE JONES (Naas), in reply, said that as far as his experience went those towns where the landlord was the direct owner were the best from a sanitary point of view; and those towns where the titles were complex, where there were a number of owners, or where the houses were sub-let, furnished the worst examples.

On "*The Sanitary Conditions under which Cholera prevails in Northern India*," by Surgeon-General A. C. C. DE RENZY, C.B., of the Indian Army.

At the present time when cholera is causing great loss of life on the Continent, I hope that a short account of the sanitary conditions under which the disease prevails on its native soil in India may not be without interest and practical value in this country.

A few figures will show what terrible ravages the disease commits in India. Among the native population in 1882 there were 351,971 deaths registered under the head of cholera, and this figure, enormous as it is, very much understates the fact, because a vast number of deaths altogether escape registration owing to the unavoidable imperfection of the machinery employed for the purpose. We have more accurate records of the

cholera mortality among the British troops. In the 21 years ending with 1882, in the British garrisons of Northern India, averaging a strength of 36,744 men, cholera caused 3,802 deaths, or 103 per 1,000 of strength. Or to take a shorter period for illustration, and excluding the deaths that occurred among the troops in the Afghan war, in the five years ending with 1882, the British troops had 725 deaths from cholera, or 21.6 per 1,000 of strength. Supposing the same rate of mortality to have prevailed in Ireland in the same period, there would have been 108,000 deaths from cholera.

In order to convey a clear conception of the sanitary conditions under which cholera prevails in Northern India, I shall briefly describe the state of a few well-known places that may be regarded as typical of the whole. I shall take Mianmír as the type of military stations. This station was selected in 1849 by Sir Charles Napier under the best medical advice then available. It is six miles from Lahore and seven from the river Ravi, above which it has an elevation of 50 feet.

It stands on a great alluvial plain, 1,000 feet above the level of the sea, and is so dry that the surface is perfectly destitute of vegetation. The street surfaces of this city are not more bare of vegetation than the surface of the Mianmír Plateau in its natural state. Of late years, with the aid of artificial irrigation, trees have been grown in the cantonment, but they present a stunted, unhealthy appearance except where they are plentifully supplied with water. The soil is a stiff clay, very impenetrable to water. The rainfall is about 20 in. in the year. The mean temperature in the shade ranges from 98° F. in June, to 52° F. in January, and the mean humidity of the air from 20 in May to 58 in September—the mean of the whole year being 40. Saturation being = 100.

Water is found in abundance at a depth of 40 ft. The strata lying between the surface and the water level are extraordinarily free from moisture. A sample taken at a depth of 6 ft. was found on analysis to contain only 11 % of moisture.

The cantonment occupies an area of 10 square miles, the garrison consisting of about 3,000 men, of whom 1,000 are Europeans, the rest native troops. The whole population, including the population of the bazaars, camp followers, &c., was at the census of 1868 13,757, or about 5 persons to the acre. The features which, independently of military considerations, commended this site to Sir Charles Napier, were its great dryness and the facilities it affords for the rapid discharge of the rainfall.

The health history of the station is truly tragical. Typhoid fever has always prevailed, and in 1856, 1861, 1862, 1867,

1872, 1879, 1880, and 1881, the troops suffered severely from cholera. In 1856, 31 % of the European troops were attacked, and 16 % died. In 1861, 42 % were attacked, and 24 % died. In the later epidemics the mortality did not exceed 8 %.

Now what were the sanitary conditions under which these disastrous epidemics occurred? The troops were well housed, and had plenty of room. The barracks were designed by Sir Charles Napier himself, and quite regardless of expense. They were spread over a very wide surface in order to avoid the evil of overcrowding. The scavenging was fairly good—that is, so far as surface inspection went there was very little filth to be seen. There were no sewers of any sort; the roadside drains were intended for the discharge of rainfall only.

During the first two epidemics there were two most grave defects. (1.) The privies were trenches which were originally fifty feet deep. In these the night soil accumulated from year to year, so that at last they were filled up to within twenty feet of the surface, and the stench from them was, at times, perfectly overpowering. The privies were at a distance of 100 yards or so from the barracks. The second defect was closely connected with the first, for, unfortunately, the wells—one for each company barrack, which supplied all the water required for every purpose—were only 100 yards from the privies, and, of course, they became contaminated with excremental matter, which readily percolated through the sandy water-bearing sub-strata. It was only when the terrible outbreak of 1861 occurred that the danger of this state of things attracted attention, and then the trenches were ordered to be cleaned out, and privies to be formed on the surface dry earth system. Immense quantities of faecal matter were removed, but, no doubt, much of the deposits of previous years had passed beyond reach of removal.

The wells continued to be used as before. In the following year there was another great epidemic, when 5 % of the British troops were destroyed. The construction of the wells was peculiarly bad. The following description of them is taken from the Punjab Sanitary Report of 1868:—"Attached to most of the wells is a masonry reservoir, eight feet square by four feet deep, and elevated about six feet above the ground level. These reservoirs were covered with planks loosely laid. Some of the planks had been removed from the reservoirs that I examined, leaving spaces a foot or two wide uncovered. I saw a good deal of dirt of different kinds in the reservoirs. Wells are a favourite place of rendezvous for natives, and the covers of the reservoirs afford a comfortable seat. But, besides the large reservoirs, there were smaller ones, about two feet square. Water is re-

ceived from the large reservoirs into the smaller through an iron pipe. The smaller reservoirs are quite uncovered, and from these the blistis (water-carriers) fill their water-bags (mussacks), squatting, during the operation, on the side-wall of the reservoir, their shoes often in actual contact with the water. These small receptacles are freely open to any one who wants to draw water, the sweepers of the adjoining privies included. It is impossible to say, at this time, to what uses the water in the receptacles may not have been applied." I have little doubt it was constantly used for rinsing out the latrine utensils.

By 1872, when the next great epidemic took place, an important change had been made in the water supply, for an irrigation cut, a branch of the Baré Doáb Canal had been led into the station and *the drinking water* of the troops was ordered to be taken from it. This cut, which was about three feet wide, flowed through the station uncovered, and water was conveyed from it in the usual way by blistis with mussacks. Some time *before* the epidemic broke out among the troops, cholera had prevailed among the native population, and some days *after* the occurrence of the outbreak the body of a native was found lying in the cut, above the point where the supply of the troops was taken. It was, most probably, the body of some poor wretch who had gone into the cut to relieve the agony of the thirst of cholera.

Briefly, in the later epidemics, at all events, the sanitary condition of Mianmír may be described thus. The scavenging was as near perfection as possible, there were no sewers of any kind. All excreta liquid and solid were removed in carts. The latrines were kept so sweet on the dry earth system, that there was a complete absence of offensive odour. The troops had good food, suitable clothing, light duties, splendid barracks, with abundant ventilation; the one defect was the water supply, it was open to contamination in a great variety of ways. Whenever cholera prevailed in the neighbourhood, its infection had the most ample facilities for reaching the water supply, and it is specially worthy of note, that in no single instance has cholera broken out at Mianmír until after the neighbouring population has been attacked.

The description of the sanitary state of Mianmír applies, with slight modification, to all the stations in the plains of Northern India. The scavenging is good in all. I have never seen any English town so cleanly kept as the Punjab cantonments. The barrack accommodation too is magnificent. The Government have spent upwards of twelve millions sterling within the last eighteen years on barrack accommodation. But the water supply is everywhere bad. This is the fatal flaw in

the sanitary arrangements, the removal of which will, I believe, render the cantonments of Northern India quite as healthy as any part of these islands. In Fort William, in Calcutta, where the old barbarous methods of water supply were abandoned twelve years ago, the death-rate of the troops which used to be upwards of 10 per cent. per annum has in the ten years ending in 1882 been only 9 per 1,000.

With regard to the native population it would be impossible within the limits of a paper suitable for an occasion like this to give an adequate idea of the foulness of native towns. Within the last few years endeavours have been made to remove from them the grosser and more tangible forms of filth, but, limiting my remarks to the Punjab, with which province I have the most intimate acquaintance, I do not know a single town in which, in the more retired parts, there is not an overpowering stench, more especially in the rainy season. The Punjab is a great alluvial plain, as flat as a bowling green, and the houses in the towns are packed together as close as they can stand. The streets are so narrow that, as a rule, two carts cannot pass in them, and in many parts they are so narrow that wheeled conveyance is altogether impossible. There is no sewerage whatever; merely surface saucer-drains, which carry certain proportion of the semi-liquid filth to a hole, formed within the town limits by the removal of earth for making the bricks, with which the houses are built. The water supply is taken from wells sunk in the excrement sodden soil, often within a few feet of the hole into which the saucer-drains discharge. Need I say that this water is altogether unfit for use. I have chemically tested the water of hundreds of Punjab towns, and I cannot recall a single instance in which an English health officer would pronounce the water fit for use. The water taken from wells within the polluted town area differs entirely from that taken from wells situated in clean unoccupied ground outside the town limits. Thus, to take a specific case, at Umritzur, outside the city wall, the well waters contain about two grains of chlorides per gallon, while within the city the amount estimated as common salt was found to range from 4 to 189 grains per gallon, from 10 to 15 grains per gallon being the usual amount. It is obvious that the excess of chlorides must have been derived from animal excreta. Such is the sanitary condition of the Punjab, which is a comparatively healthy province, and may be made one of the healthiest places in the world. In Bengal and Assam, the endemic home of cholera, things are much worse. In these provinces there is the same surface filthiness, but the water supply is far worse than it is in the Punjab. It is derived from open tanks, which are often filled by the drainage of localities

of indescribable filthiness; and the tanks are used for bathing and clothes-washing, as well as for the supply of drinking-water. In the Punjab wells the water undergoes a certain amount of filtration in passing through the strata lying between the foul surface and the sewage holes; but in Bengal and Assam the tank waters are frequently unadulterated unmitigated sewage. It is only the rapid growth of vegetation in these tanks that saves the population who resort to them from destruction.

The history of cholera in the great cities of Calcutta and Bombay is full of encouragement as to the possibility of preventing cholera, and of instruction as to the means required for that purpose. In former days the European residents used to suffer very severely from the disease in both cities. It was a very common occurrence when I first went to Calcutta to dine with a friend one evening, and to hear next morning that he had died of cholera. This state of things has ceased, and the European residents in both cities have now as low a death-rate as the West End of London. How has this change come about? In Calcutta it was the immediate effect of the introduction of a good supply of water, combined with the sewerage of the European portion of the city, and the proof that this is the case, is the fact that in the native portion of the town to which these improvements have not extended cholera is as bad as ever it was. In 1882 there were 2,240 deaths registered in Calcutta, and of these at least three-fourths took place in the northern division of the town, where there are no sewers, where the sewage putrefies in roads or ditches, and where the water supply is derived from polluted tanks. Even on the south side the natives bathe in tens of thousands in a *nulla*, in which the water is very foul sewage.

Bombay teaches the same lesson. This city has a population of 800,000 inhabitants. Formerly it was scourged every year with cholera, the deaths from the disease numbering from 2 to 5,000 in a much smaller population than exists at present. In 1865 that wise statesman, the late lamented Sir Bartle Frere, succeeded, after a difficult encounter with native prejudice, in bringing in a pure supply of water, and from that year to the present cholera can hardly be regarded as having been epidemic in the city, except in the great famine years 1877 and 1878, when thousands of starving cholera-stricken people crowded in from the adjoining districts. In 1882 the cholera deaths numbered only 190. In 1876, although there were 32,000 cholera deaths registered in the adjacent districts, there were only 374 deaths from the disease in Bombay city.

The influence of a pure water supply is particularly noticeable in the case of Bombay, because the sewerage of the city is

really in a terrible state. The sewers are rough flat-bottomed conduits, often with little or no fall. Scores of miles of sewers have to be opened out every year in order to remove the lodgments that form in them, and the stenches that these deposits emit into the streets is simply overpowering; but, in spite of this, ever since the introduction of a good water supply nineteen years ago, deaths from cholera have been exceedingly rare among the European inhabitants.

The work of sanitary improvement in India is beset with great difficulties, owing to the strange prejudices of the native population with regard to water. An idea of the strength of this prejudice may be formed from the fact that even now, after eighteen years, there are people in Bombay who would rather die than touch the pipe water, and the same feeling prevails, though to a lesser extent, in Lahore, and other cities. But experience shows that this prejudice, if treated with judgment and consideration, gradually dies out. In Bombay, at first, there were many thousands of people affected with it. Now there are only a few hundreds.

It is to be hoped that the British Government will now take up the question of sanitary improvement in India with resolution and earnestness, and at all events make it impossible for cholera to propagate itself in the great seaport towns. This is a duty which it owes to the civilised world now that the opening of the Suez Canal has so greatly facilitated the spread of cholera from India to Europe.

And here I would briefly call attention to one source of cholera infection which is very apt to escape notice. I refer to Mecca, the great Arabian place of Mussalman pilgrimage. The reduction of the cost of pilgrimage of late years has enormously increased the number of pilgrims from India, and remembering this, it is not surprising that there have of late been several great outbreaks of cholera at Mecca. There was one there in the spring of 1883, which caused immense mortality, and excited very little attention in Europe, owing to the rigorous precautions that are taken to prevent the defilement of the sacred place by the presence of the infidel. This is a matter which deserves the serious attention of the States of Europe, as Mussalman pilgrims would be very apt media for the conveyance of cholera to Egypt and the southern shores of the Mediterranean. I have a very strong suspicion that it was through the pilgrims that Egypt was infected last year.

In conclusion, I submit that the experience of cholera in India affords sure grounds for believing that cholera is a disease which, more perhaps than any other of the great pestilences which afflict the human race, admits of prevention.

Places in which the soil is kept pure, and where the water-supply is taken from a pure source, and is so distributed as to be incapable of receiving contamination in transit to the consumer, have little to fear from cholera. It is only places where the soil is allowed to become saturated with excrement, and where the water-supply is taken from wells situated in an excrement sodden soil; or if it be taken from a pure source, where it is allowed to become contaminated in foul cisterns, or by sewer air through the channel of pipes connecting the water mains with the sewers, that have reason to dread it. In places where such conditions exist cholera is justly an object of terror.

Surgeon-Major HAMILTON (Dublin), who had had eighteen years experience as an army surgeon in India, differed from some of the conclusions arrived at by the author of the paper. He was inclined to concur with the views of Dr. Bryden, who expressed in many of his magnificent works, which were now historical, his theory of cholera. Dr. Bryden held that there was an endemic area of cholera, which was the delta of the Ganges; in this enormous district cholera was always present. His argument was that the south-east monsoon spread cholera from that area throughout Upper India. It had been found that cholera did not attack the whole of Northern India at once. Its progress was distinctly traceable, and might be traced overflowing the endemic area. It would advance northward during the summer, gradually die down during the autumn, and disappear in the winter. Sporadic cases might occur in a district during winter; and this, Dr. Bryden holds, meant the invasion of that district, and if meteorology were favourable an outbreak would occur in that district the following spring. He contested Surgeon De Renzy's theory that the cholera was caused by impure water. What possible connection could there be between an epidemic of the character which overtook the British Army in Northern India, in 1879, and impure water? When cholera was epidemic impure water would no doubt increase and intensify it. Surgeon De Renzy had spoken of the unsanitary character of India. It was undoubtedly terrible in many ways; in fact there was no such thing as sanitation among the native population in India. But he did not think Surgeon De Renzy was quite fair in taking Mianmir as a type of the Indian military stations. Cholera in the Bengal Presidency invariably advanced northwards. It never radiated from a centre. There was not an instance of record of cholera going down stream in the valley of the Ganges. He disputed the argument that cholera was distributed by human intercourse. He had no doubt a great body of men marching through a district prepared for cholera would act as a spark to gunpowder. But to say that an individual passing from here to there could carry cholera in his clothes into a district not prepared for cholera, was to say what he believed to be

undoubtedly wrong. It had been clearly proved that cholera "in India at all events," was not contagious, in the ordinary sense, although Dr. Bryden admits that when it invaded Europe, it did seem to take on the typhus form. He firmly believed that so long as the face of nature in India remained unchanged, so long would there be great periodic outbreaks of cholera passing from Bengal to the north of India, through the Khyber Pass and Central Asia, and from thence invading Europe, which was the way, he believed, the present outbreak invaded Europe.

Dr. W. J. SIMPSON (Aberdeen) could hardly agree with the previous speaker. He had no experience of India; but he was at Damietta last year during the outbreak of cholera in Egypt, and what he observed there would induce him to support the theory of Surgeon De Renzy, that impure water supply was the cause of the spread of the disease. The cholera had been in Damietta long before official reports mentioned it, and it was only when the Nile had reached its lowest point and had become thoroughly contaminated with the discharges from several cholera patients that the outbreak assumed its epidemic form.

Surgeon-Major WYCLIFFE JONES (Naas) believed that the theory that human intercourse would *not* propagate cholera had been disproved by the great European outbreaks, and that the doctrine would be a highly dangerous one. In 1865 cholera spread all over the Mediterranean basin, and it was observed to pass by certain places, and to attack others more distant from the delta of the Nile and the port of Alexandria. This outbreak probably originated at Mecca, and was carried thence by pilgrims returning home; the places thus escaping were proved to be those that received few or no returning pilgrims, and to have, generally, little or no intercourse with the point of origin. In 1867 cholera was clearly conveyed all over India, *in a southerly* as well as every other direction, by pilgrims from Hurdwar.

Dr. J. F. J. SYKES (Hon. Sec. of the Section) reminded Surgeon-Major Hamilton that in the present epidemic in France they had an example of cholera travelling *southwards* into Italy.

Surgeon-General DERENZY, C.B. (Bray), then replied. With reference to Surgeon-Major Hamilton's enquiry as to what possible connexion there could be between the cholera epidemic that attacked the British troops in Northern India in 1879 and impure water, Surgeon-General De Renzy saw a very close connexion. Owing to the primitive and defective state of the arrangements, the water supply of the troops was open to contamination in a hundred ways, and when cholera prevailed among the native population, it was simply owing to good luck that its contagium did not reach the troops through the medium of their water supply. He described the arrangements for the supply of water to the troops on the Afghan campaign. An open metal bucket was fastened to the tent pole. The drinking

water was emptied into the bucket from the goat skin (Mussak) in which it was conveyed, and the men ladled the water out of the bucket as they required it with a panikin. The atmosphere of the tent was thick with dust, which was being constantly deposited in the bucket. He had seen a sick man vomiting in a tent on the ground—the vomit soon dried up, and was dispersed through the air as dust. Is it to be wondered at that in such a state of things when cholera appeared in the vicinity, it soon extended to the troops and committed terrible ravages among them. With a well-arranged water supply, he believed that the troops in Northern India would be as healthy as those quartered in the United Kingdom. Dr. Hamilton was quite mistaken in supposing that cholera epidemics invariably travelled northwards. It is wonderful with what persistency this erroneous statement clings to life. The fact is, that a year hardly passes that cholera does not spread from its endemic area in Bengal towards Jubbulpoor and the southern tracts of India.

On "*The Objects and Work of Ladies' Sanitary Associations.*"
by SARAH ELIZABETH GRIMSHAW. Read by R. O'B.
Furlong, Esq., M.A.

At the meeting of the National Association for the Promotion of Science, held in Dublin in 1881, a paper was read by Dr. T. W. Grimshaw, entitled, "The necessity for extending the operations of Ladies' Sanitary Associations."* At that time the Dublin Ladies' Sanitary Association had been but six months in existence, its aims and plans were brought under the notice of the Health Section, and Dublin ladies obtained (by means of the paper referred to and the discussion which followed its reading) many useful hints and much valuable information as to what the scope and duties of such associations should be. At the meeting of this association, which is altogether devoted to the promotion of measures connected with the health of the people, it is a pleasing duty to announce that the Dublin Ladies' Sanitary Association, although still struggling, has been in existence for three years and a half, and during that period has done a considerable amount of useful sanitary work. At the request of the Dublin Ladies' Sanitary Association, the

* Transactions of The National Association for the Promotion of Social Science (Dublin), 1881, p. 654, et seq.

writer has undertaken to prepare this paper, with the view of again calling attention to the necessity for extending the work of such associations, and showing how much work may be done, *even* with the limited means at the disposal of the Dublin Association, and the great field that is open for women's work, in the improvement of the health of all classes of the community, but especially among the lower stratum of the social fabric in great towns. The opportunity is specially appropriate, as the London Ladies' Sanitary Association is affiliated with this Institute, as it also is with the National Association for the Promotion of Social Science, and the Dublin Ladies' Association has now reached a sufficient age to fairly claim to be admitted to the sisterhood.

The Committee of the Dublin Ladies' Sanitary Association considered that they should not lose the good opportunity afforded by the meeting of this Congress to bring forward the advantages of "Ladies' Sanitary Associations"; in other words, woman's help in the cause of sanitary science, and the claims of the Dublin Association to sympathy and aid. It is now fully acknowledged how important healthy conditions of life are for the happiness of the people, and what ignorance and indifference exist with respect to them among the poorer classes, and perhaps among all classes in certain degrees. It is also fully acknowledged that it is one of women's especial works to visit the poor; this is done in many different ways, and for various purposes: for trying to carry religion into houses where it is little thought of, or for visiting the sick, or for the conveyance of charitable relief of different kinds. Now, among all these perhaps there is no cause in which woman's tact and sympathy should be of more value than in instructing the poor in the simpler truths of "sanitary science." There are many things which could be noticed by a lady visitor, as a woman among women, which would be passed over by regular sanitary officials, or if noticed by them, perhaps objected to as an interference, and perfectly unheeded. The inspector of nuisances, or other official, can see to the formation of drains, to proper house accommodation (as to space), or objectionable occupations, &c., but he cannot enter into the question of personal cleanliness, the proper care, cleanliness, and clothing and feeding of children, or of the food used. It must be very difficult, we all acknowledge, for the people to which I refer to carry out any cleanliness in the "dens" in which they live, but they *must have* the *knowledge* given them, and the belief in its efficacy instilled into them, before they will even make the *attempt*. The hardest part of the work is to make the lower classes *understand* the importance

of cleanliness, to make them see the advantages that will accrue to *them* from it, and persuade them to *try* it. If once they get their interest aroused it will be easy to show them what to do. We all must know the difficulty that housekeepers find among their servants in making them cleanly in their work and persons; they seem to think one brush should sweep many different kinds of things, and one duster dust several rooms. I was once told that a washstand and belongings in a bedroom were quite unnecessary, as the servant in question could use her pantry! and this by one supposed to have come from a most respectable home; and at another time, on asking if the personal washing had been properly carried out, the answer was, "Oh, ma'am, it was only a fortnight ago or so!" Change of clothing, too, sufficiently often, is much neglected by domestic servants, and if this be so among a class who have mixed for some time with those above them, and lived among cleanly surroundings, how much more likely will it be among the class who never go out of their own sphere, and never see or hear anything better? It therefore seems that on all these points the visitors of Ladies' Sanitary Associations can be of so much use; they can instruct the women about fresh air in their rooms; cleaning their rooms, themselves, their children, and clothing, explain the necessaries required for these purposes, and help them to get them; they can explain how they and the children must suffer if they use dirty water or dirty food, such as cheap unwholesome fish or meat (as a treat), or if they let their children eat food picked up, sometimes in yards or dust heaps, unripe apples, and many things of the kind.

They also have the power and advantage of acting as "go-betweens" between the tenants of these wretched places and the owners, and where perhaps a complaint would not be made by the tenant direct to the owner of something neglected to be done in the way of repairs or cleaning, for fear of being turned out, or rent being raised, it could be mentioned without fear to a lady visitor, who might bring it before the proper health authority. There is in London a special society for this purpose, called the "Sanitary Aid Society." Another very important good that can be effected by lady visitors is the prevention of the spread of infectious diseases, thereby not only benefiting those visited, but the whole community. The first thing to be done, where there is any sign of sickness, is to overcome the objections (which are, I believe, generally strong) to sending the sick person to *the hospital*, and to point out to the women how much better sick people can be cared for in a hospital than in their own homes, and how much it will increase the chance of recovery. They can also be persuaded to *notice*, at *once*, any sign

of illness in themselves or families, have medical advice at once, and learn where and how to obtain it. They can also be taught the value and use of cheap and easily procured disinfectants, and the necessity of keeping separate, and washing separately, as far as is in their power, the things used by any of them who *seem* sick, even if they do not know what is wrong. These are points which would not, and could not, be entered into by any sanitary authorities, and which the people themselves are unlikely to *know* of, or indeed *think* of. In fact, the good that might be done by Ladies' Sanitary Associations, if efficiently worked, and worked *by those who take a thorough interest* in them is incalculable, but the visitors require great tact and discretion, as no doubt it would be difficult to broach such unwelcome subjects without hurting the feelings or appearing to interfere too much in the privacy of home arrangements. It is here that lectures, and especially the lectures given by ladies conversationally in the district rooms, prove such useful helps. To quote an extract, from the London Report of 1884, of a letter to Miss Adams from a lady at Derby: "One is able to say in open lecture many things which politeness makes it almost impossible to speak of in an individual cottage."

One very hopeful and encouraging fact has been proved by the district visitors, namely, that in their rounds of visiting they have always been well received, and when known among the people of the district, they have been received with welcome, and their visits looked forward to with pleasure. To quote from their last report: "If there is any interruption to their visits, they constantly ask, 'Why don't the ladies come to us?'" As there was considerable doubt in the minds of some persons about this, when the district visiting was first arranged, it is well that it should be made widely known, as the fear of meeting with any disagreeable opposition might deter some from becoming district visitors.

There have been several such associations founded, which are working well; and I see from the last report of the London Ladies' Sanitary Association, kindly sent by Miss Adams, its secretary, that the good influence has extended to Australia, there being an "Australian Health Society" in East Melbourne.

To give an example of how largely the London Society is disseminating sanitary knowledge, it may be mentioned that there have been 1,535,620 pamphlets published and reprinted since 1859, besides leaflets, &c., and a mass of inquiries answered; and from their report we also see that many of these pamphlets are to be translated into Japanese, Chinese, and modern Greek.

The London Association has taken up the questions of seats in shops, early closing, play-grounds for children, bread reform,

matrons' aid (or midwife's) institutes, lavatories for women and children, &c. Of course these are the result of many years' work by many workers, and the Dublin Association has not had time to do more than commence with the most simple groundwork, which, however, it is hoped will be a foundation for all these other branches.

The Dublin Ladies' Sanitary Association was founded in 1881, by Miss Hamilton Stubber. Its first President was The Countess Cowper, and it now has the honour of having as President The Countess Spencer, who has on every possible occasion shown her sympathy and given her aid to the Society. For full particulars of the work done by the Ladies' Sanitary Association of Dublin, I must refer you to the Report for the year ending 1884; but some of the details of the work may be briefly referred to. Pamphlets have been distributed; lectures given to ladies, and also to wives of working men; a lending library established. Classes have been formed for training lady visitors in hygiene and domestic sanitation, and in connection with these there have been examinations, and certificates and prizes awarded. This is considered a valuable part of the work, as *it is of great importance that those who are to teach others should be thoroughly grounded in the necessary knowledge.* Lectures have been given in the district-room to the women and girls of the neighbourhood by ladies, and also practical lessons in cookery. Another important part of the work of this Association has been the attention drawn to the matter of including hygiene in the course of instruction in National and other schools. In two of the Roman Catholic training colleges it now forms part of the course; and, owing to the application by Lady Cowper to Sir P. Keenan, the Board of National Education took up the question, and a committee was formed to inquire into it; it is hoped that the result will be satisfactory, and that the children of the present day will learn what will make them healthier and happier than their parents have been, and enable them to render their future homes healthier and pleasanter dwelling-places than those at present inhabited by the majority of our working class.

Lastly, though it is perhaps the most practical and important part of the work, there is the district visiting. Unhappily, the districts at present worked in Dublin only number *two*, owing to the want of *visitors*. The committee have tried in every way to attract ladies as visitors, but hitherto it has not been taken up with sufficient zeal, and this seems the more surprising, as happily in this work "creed" makes no difference. Protestants and Roman Catholics work together, with the approval of the clergy on both sides. Surely there must be some women in

Dublin who are not tied by houses and children of their own to look after, and who could undertake the work, and find occupation and pleasure in it. Is Dublin incapable of producing a second Miss Octavia Hill, or Miss Adams, or even followers of theirs? We had hoped to have succeeded in persuading Miss Octavia Hill to come to Dublin to attend this Congress, and by her presence, and perhaps words, to have roused and inspired some in Dublin to follow in her footsteps, and do for "Dear dirty Dublin" what she has done for London; but, unfortunately, her own work, in her own especial town, is more than enough for her, and in a letter she says she has undertaken more work, "which will require much thought and work." The next best thing is to ask any ladies inclined to interest themselves in this work to *read* an account of what Miss Hill has done, and study her opinions and advice on the subject. As before mentioned, plenty are found to be district visitors for other purposes, and possibly in pleasanter and easier ways than for sanitary work; but if it be remembered that "Cleanliness is next to Godliness," and that, in fact, they must and do go together, some will be found to work in the "straight and narrow way," which will lead to the other and higher work. In conclusion, the writer begs to say that she has prepared this paper simply to bring under public notice the importance and value of associations of this kind, and to ask for *workers*, and not in any way as a paper for scientific discussion.

Dr. ALFRED CARPENTER (Croydon) remarked that the Ladies' Sanitary Association was helping the work of the Sanitary Institute very much, and he therefore hailed the establishment of this association in Dublin with the very greatest pleasure. The knowledge that the Countess Spencer was at the head of this association, and that other ladies would certainly imitate her example, led him to hope that the result would be accomplished here more extensively, comparatively, than the work that was being done in London under Miss Octavia Hill. There was much more in connection with beneficial sanitary work than a consideration of drain pipes; it branched out into all those points which had been noticed in the paper, and in many other directions besides. One of the most important branches was the endeavour to get some better ideas into the lower classes as to what the education of their children should be, and as to the way in which they should be brought up to face the difficulties of life. He sincerely hoped that the movement might meet with the support of the ladies of Dublin who were anxious for the welfare of their own beloved ones; for who could tell from what cabins or hovels

sickness might be brought into the homes of the richest in the land?

Mr. H. H. COLLINS, F.R.I.B.A. (London), considered that the truest way of dealing with sanitation was that marked out by the Ladies' Sanitary Association. Work undertaken in the spirit of a remark to be found on page 7 of their annual report, "that until ignorance of the laws of health was dispelled amongst the poor, little improvement could be expected," was certain to accomplish great good. Having visited several of the slums of Dublin on the previous day, he felt bound to say that it was all very well for them to preach what should be done by the poor and what should not be done, but any one who saw their wretched homes must admit that it was almost impossible for them to have any ideas of sanitation, and that even if they could be impressed with their necessity it would be impossible, under the existing conditions, for them to carry them out. He was surprised that the people were so patient and so good, considering the miserable lairs which they had to exist in.

Dr. CHARLES A. CAMERON (Dublin) observed that a larger proportion of the population of Dublin was in a state of more abject poverty than was to be found in any city in England. You could walk for miles in London without meeting a really bad street or a number of dilapidated houses, but you could not pass out of any of the fashionable squares of Dublin without going through streets in which the people were steeped in wretchedness and poverty. That state of things was general throughout this decaying city. The purlieus of Dublin were worse than those of London. It was therefore nonsensical to compare the communities in the two cities. It was surprising to him that the death rate in Dublin was only 27 per 1,000, and not about 33 per 1,000; and he was happy to find that though it exceeded the death rate of London, it was lower than the death rate of most great cities on the Continent. He heartily approved the objects of the Ladies' Sanitary Association. Few were better qualified than he to express an opinion as to the value of their work. He had noticed how frequently they had called the attention of the Sanitary authorities to neglected places. He thought the large mortality in this city arose in part from the insufficient feeding and clothing of the children, and this remark applied not merely to the poor, but also to the well-to-do people. He had been surprised to find women of the middle class well and comfortably clothed themselves while the arms and legs of the children whom they were dragging out with them for their miserable walks were purple from cold. The Ladies' Sanitary Association had a great work to perform, and he was surprised so few ladies were taking an interest in it. Great as had been the work done up to the present, vast was the amount which still remained to be accomplished. Thirty-three thousand out of the fifty-four thousand families residing in the city were living, on an average, in one and half rooms per family. He thought the best way to improve

Dublin would be to improve two-thirds of the habitations off the face of the earth. He took some little credit to himself for having, by persistent agitation—that was the only way we could get anything in Ireland—induced the putting in force of the Artizans' Dwellings Act. They could not expect landlords to provide decent dwellings for people so sunk in poverty, that perhaps they could only pay one week's rent in every four weeks. What he had always contended for was that it was the duty of the Municipal authorities to provide dwellings for the lowest and most wretched stratum of the population. There were ten thousand people in the city requiring house accommodation who could not afford to pay a rent higher than one shilling per week. Plans were now being prepared, he was glad to say, for the erection of houses upon corporate property which would suit people who could not afford for rent more than one or two shillings per week.

Dr. MACDOWEL COSGRAVE (Dublin), Hon. Secretary of the Section, contended that the poverty of the lower classes would not be so great if less money were spent on intoxicating drinks, and urged that the Sanitary Associations should not attempt to ignore the fact.

Sir ROBERT RAWLINSON, C.B. (President of the Congress), said that before a remedy could be applied it was necessary to probe the wound to its greatest depths. This negligence of the lower stratum of society did not belong solely to despotisms or to so-called Free Governments, or to Republics. There was as much destitution under one form of government as under another, as in the cities of the American Republic there was overcrowding, neglect, vice, and destitution equal to that of the great cities of European kingdoms or in Great Britain. It had arisen from a social neglect—from a blindness and an apathy which allowed the lowest stratum of society to degenerate into a condition out of which they themselves could not by any possibility escape. But in looking at that state of things there was another rock to be avoided. It had been said, and he supposed in some respects it was true, that charity covered a multitude of sins. Some persons, he dare say, imagined that by distributing alms broadcast, by giving freely of their substance, they were doing a certain amount of good. It had been one of the tasks of his life to investigate what were called charitable endowments, in different parts of the country. These endowments had increased to an enormous extent in some instances, and as wealth had increased abuse had increased with it, until his observations forced him to say "Show me a largely endowed district and I will show you a corrupt population." Where charitable endowments were relied on they took away the self-reliance of the population and led to idleness; therefore they must be cautious in attempting to do good that they did not make greater evil. "Under no circumstances can relief be given in money," was an admirable rule of the Ladies' Sanitary Society. The prime question of putting the poor into a proper condition was, however, a Statesman's work. The laws must be so framed, so regulated, and so

administered, that there should be relief without communism, for woe be to that nation when the people ceased to rely on their own endeavours, and looked to the ranks above to feed, clothe, and take care of them; disruption must soon come. It was their duty to strive by all the means in their power to give means of health, comfort, and religion to every human being born into the land, and they must then, by constant reiteration, constant attention, and constant labour attempt to keep that arrangement. Relief must come from above and it must be imparted to those below. Take the slums and tenement-houses of any town, and preach from Christmas to Christmas to the shivering, starving inhabitants on the advantages of clean rooms, fresh air, ventilation, warm clothing, and wholesome food, abstinence from drink, and attendance to religious duties, and do nothing more, and insult will be added to injury. Just as well tell the blind to see, the deaf to hear, the lame to walk, as to tell these people to be well-housed, well-clothed, and well-fed. They cannot provide their houses but, perforce, occupy the dens society allows to exist. He proposed a vote of thanks to the author, and wished God-speed to the work of the Ladies' Sanitary Association in Dublin.

On "*The Homes of the Working Classes in Dublin*," by EDWARD SPENCER, M.A., T.C.D., Secretary Dublin Artizans' Dwellings Company, Limited.

THE difficulties of dealing with the re-housing of the poor by general legislation are very great, owing to the diversities of conditions in different towns being such as to call for legislation of a local character. Among these may be mentioned the habits of the population; the development of various industries demanding space; schemes for railway improvements, selecting, where possible, poorer localities; movements of population out of towns to suburbs, emptying better class houses.

A more important difference, perhaps, is that between the growth of popular opinion on the subject in various towns. We have, on the one hand, the example of Glasgow, which twenty years ago recognized the evils caused by its then condition, and led the van in this great work; and on the other the case of an English town, where the local authority took preliminary steps under both Sir R. Cross's and Mr. Torrens' Acts, but abandoned them, notwithstanding the representations of their medical officers of health, and finally

questioned the right of the Local Government Board to interfere in the matter.

But the greatest difficulty in dealing with this question by general legislation is, that it is now happily recognized that the improvement of the homes of the working-classes cannot be effective without the improvement of the classes themselves; and the latter does not depend on legislation alone, but on the proper administration of the existing sanitary laws; of general laws relating to the homes of the poor, which of course differ in various towns; in a very great degree to the education of the masses, and to the material prosperity of a town; and to a variety of circumstances affecting more or less, according to local influences, the lives of our poorer brethren. For these reasons, and because Dublin, of all cities which have carried out improvements of this kind, is most peculiarly situated, I propose to discuss the subject of this paper from a local point of view, and from the following standpoints:—

I. THE WANT.

II. THE STATUTES RELATING TO THE SUPPLY OF THE WANT.

III. HOW THE WANT HAS BEEN SUPPLIED IN DUBLIN.

I. *The Want*.—We shall better be able to form an idea of the present condition of the homes of the working classes in Dublin, by observing the changes which have taken place in them during the decade 1871-1881, more especially as the former year may be taken as the era of a more vigorous sanitary administration in this city.

In 1871 there were, out of a total number of 58,327 families, 44,933, or 77 per cent., living in 10,954 tenement houses, being 4.1 families to each house—the term "tenement" being applied to all houses, of whatever size, accommodating more than one family. In 1881, out of 54,725 families, 39,997, or 73 per cent., lived in 9,854 tenement houses, or 4.05 families per house. The number of persons to each family had, however, increased from 4.2 in 1871 to 4.5 in 1881.

I have classified the tenement house accommodation afforded into seven grades. The highest consisting of houses of 10 rooms or more, occupied by 2 or 3 families, and the lowest being houses of 1 room, occupied by 2 or more families—a class of accommodation which had happily disappeared in 1881.

TABLE I.

CLASSIFICATION.	HOUSES.			FAMILIES.		
	1871.	1881.	Increase or Decrease.	1871.	1881.	Increase or Decrease.
1. Houses, 10 rooms or more, occupied by 2 or 3 families	1785	1325	-460	4382	3247	-1135
2. Ditto, 5 to 9 rooms, occupied by 2 or 3 families.....	3274	3317	+43	7776	7906	+130
3. Ditto, 10 rooms or more, occupied by 4 or 5 families	1636	1298	-338	7368	8878	-1490
4. Ditto, 10 rooms or more, occupied by 6 or more families	1998	1743	-255	15021	12987	-2034
5. Ditto, 5 to 9 rooms, occupied by 4 or more families	2040	1983	-57	9893	9575	-318
6. Ditto, 2 to 4 rooms, occupied by 2 or more families	216	188	-28	403	404	-89
7. Ditto, 1 room, occupied by 2 or more families	5	...	-5	12	...	-12
TOTAL.....	10954	9854	-1100	44945	39997	-4948

The following table will show the single house accommodation in Dublin in 1871 and 1881:—

TABLE II.

	HOUSES AND FAMILIES.		
	1871.	1881.	Increase or Decrease.
1. Houses, 10 rooms or more	5033	4692	-341
2. Ditto, 5 to 9 rooms	6141	7766	+1625
3. Ditto, 2 to 4 ditto	1675	1876	+201
4. Ditto, 1 room	86	14	-72
TOTAL	12935	14348	+1413

It will be seen from Table I. that of 1,100 tenement houses which have disappeared, 1,053, occupied by 4,659 families, contained more than ten rooms, and from two to six families each. It is certain that this decrease would have been much larger but for the constant supply of first-class single houses which have lapsed into tenement houses. The tables also show that while the decrease of families of all classes amounted to 3,538, those occupying tenemental dwellings have decreased by 4,948, and that the difference represents 1,413 families who have advanced to single house accommodation. While this transference is

satisfactory, it must not be forgotten that the accommodation of the families remaining in the old dwellings has deteriorated, as the diminution in the number of tenement houses is almost altogether confined to those affording large accommodation while the decrease of houses containing from four to nine rooms, and from two to four or more families, is almost imperceptible, and with this must be taken into account the increase of the proportion of persons to each family in 1881.

On the whole, we have the broad fact that in 1871 77 per cent. of the families in Dublin, or 188,769 persons lived in tenement houses, and that this proportion was only reduced to 73 per cent., or 182,278 persons in 1881.

With reference to the condition of these houses, it was sworn before the Royal Sanitary Commission on Dublin in 1879 that of 9,760 which then existed, 2,360 were unfit for human habitation, 3,500 were repairable, and 4,000 in a better condition. Although private enterprise may supply a number of new dwellings equal to those which are closed by decay and from want of sanitary accommodation, the number of existing tenement houses will be maintained by the annual supply of second-hand dwellings converted from single houses, and it is out of the question to expect that the great majority of the working classes in this city will have any accommodation for many years to come, but that provided by tenement houses.

The want seems therefore to be of two kinds:—The demolition of old and substitution of new buildings, and the proper maintenance of existing dwellings.

II. THE STATUTES RELATING TO THE SUPPLY OF THE WANT.

In dealing with this branch of the question, I shall refer to the laws relating first to the provision of new, and secondly to the maintenance of existing houses.

II A. The principal statutes affecting the demolition and reconstruction of dwellings, in force and relating to Dublin, are:—

- a. The Artizans' Dwellings Acts (Sir R. Cross).
- b. Those portions of Torrens' Acts relating to demolition and reconstruction.
- c. The Labourers' Dwellings (Public Works Loans) Acts.
- d. The Valuation Act.

a. *The Artizans' and Labourers' Dwellings Improvement Act, 1875 and 1879, and the Artizans' Dwellings Act, 1882, Part I.*

Two areas have been cleared in Dublin under the provisions

of the Artizans' Dwellings Act, 1875—that known as the Coombe area, containing 4½ acres, now built over by the Dublin Artizans' Dwellings Company; and the Plunket Street area, containing 3½ acres, just cleared.

I append a table giving details as to valuation and cost, &c., of the two schemes, to which I shall have occasion to refer when discussing the objections urged against the working of the Act in Dublin.

	Population.	Valuation.	Amount of Agreement Purchases.	Arbitrators' Awards.	Additions by Juries.	Costs of Traverse.	Total cost of Scheme.	Percentage of Increase of Total cost over Valuation.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
Coombe....	981104	7 9	Nil.	11121 9	11319 15 10	212 14 6	15983 19 8	48
Plunket St..	161912470	0 0	11130 5 8	7936 17 2	48 0 0	20 0 0	19135 2 10	52

These objections may be summed up as follows:—

1. Compensation to weekly, monthly, and yearly tenants.
2. Large increase of arbitrators' over valuer's award.
3. Appeal to jury.
4. Unfair interpretation of the words "fair market value."
5. Excessive compensation for trade disturbance.

1. The compensation to 266 weekly, monthly, and yearly tenants on the Coombe was £1,397 4s. 10d., including traverses and costs. In Plunket Street area a more rigid application of the existing law was enforced, and no compensation awarded to any such tenants. Some idea of the amount saved to the rate-payers by this improved procedure may be gathered from the facts that out of a total number of 159 houses on Plunket Street area, 129 were "tenement," containing weekly tenants (who in the Coombe area were each awarded 26 weeks' rent), and that the amount claimed for the tenancies under discussion was £20,398 10s.

2. The large increase of the arbitrators' over the valuer's award in both schemes is remarkable; in the Coombe it is 48 per cent., in Plunket Street 53 per cent. In neither scheme was there any appeal by the Corporation against the arbitrators' award. Having regard to the favourable consideration nearly always given by Dublin juries to every claim by a private citizen against a public body, it might not have been of much use for the Corporation to have appealed against the arbitrators' award, but although the same tendency prevails in London and other English towns, there were several appeals against the arbitrators' awards successfully fought by the local authorities there with

the twofold advantages of considerably reducing the awards and inducing the withdrawal of appeals on the opposite side.

3. With reference to appeals to juries, the law on the subject has been altered since the completion of the Dublin schemes, and no appeal to a jury can now be made except in cases where the award exceeds £1,000. In 9 traverses on the Coombe area the arbitrators' award was increased by £1,349 15s. 10d., or nearly 120 per cent.; and in 6 traverses in Plunket Street the increase was only £48, with £20 costs. None of these awards were over £1,000, and while the new legislation on this subject is specially useful in Dublin, where the amounts in dispute are generally small, the facts of the excessive compensation awarded by the juries in the Coombe traverses point to the necessity for abolishing appeals to juries, and making the arbitrators' decision final, as in Torrens' Acts. I think the following remarks of Mr. Goddard, chief surveyor to the Metropolitan Board of Works, in his evidence before the Select Committee of the House of Commons, will be appreciated by those who have had experience on the subject in this city. He says, "Although the evidence I have put in shows that in our appeals from an arbitrator to a jury we were successful in reducing the amount awarded, I think, looking at the case from an economic point of view I should, having appointed an official arbitrator, make the appeal to him final. . . . When you take twelve men haphazard selected out of society here, there, everywhere, men against whose judgment and honesty we can't say a word, but who may be led away by the forensic eloquence of some honourable member of the Bar, or by the authoritative swearing of some honourable member of my own profession, it is a toss-up as to which way the jury will go."

4. The law on the interpretation of the "fair market value" has been much improved since the Act of 1875. The arbitrator is now bound to consider, in the case of an unhealthy house, what would be its value if its condition was remedied, and to deduct the cost of such improvement from his valuation. I suppose there were not 5 per cent. of the dwellings in Plunket Street area which would not have come under the definition of an unhealthy house. The words "and all circumstances relating to such value," in the section of the Act referring to the principles of the arbitration, have also been struck out, as their vagueness tended greatly to increase the valuation. The consideration of the arbitrator is now practically limited to the present state of repair of the buildings, and their probable existence in that condition.

5. Compensation for trade disturbance is the most difficult question of all to deal with by general legislation, and the Select Committee could not see their way further on this point than

to make a recommendation to arbitrators to consider well in all cases whether the trader has not the option of setting up his trade somewhere in the immediate neighbourhood, without positive injury. While, on the one hand, there is no doubt that in Dublin many small traders, whose tenancies are monthly and even weekly, have suffered hardship from compulsory removal without compensation, it is equally true that the small trader who gets moderate compensation for disturbance and has the chance of setting up his business in any other district he likes, is much better off than the trader who lives across the street, gets no compensation, loses his business through the clearance of an area, and finds, when the area is re-peopled, that the new inhabitants are of a class quite different to that which patronised his wares. I know of several such instances in the Coombe area.

We see, then, that the expense of carrying out an improvement scheme has been greatly reduced, both as regards administration and legislation, since the Coombe area was cleared; and is capable of further improvement in both directions; that (1) compensation to weekly, monthly, and yearly tenants has been abolished; that (2) the example of English towns may well be followed in appealing against the arbitrators' award if it be excessive; that (3) in cases under £1,000 appeals to juries have been abolished; that (4) the principles on which "fair market value" is assessed are defined with much greater clearness, and established on a more equitable basis; and that (5) the necessity for careful investigation into the nature of "trade disturbance" is impressed on the arbitrator.

Two other important amendments have been introduced, which deal with evils of which we have fortunately had but little experience in Dublin, viz., that no compensation shall be allowed for (1) any improvements to the property to be acquired under the scheme, made after the publication of the advertisement under Sec. 6; and (2) for any interest similarly acquired.

Having pointed out the improvements which have been made in the Act since the adoption of two schemes in Dublin, I may be permitted to urge the importance of taking fresh action. Although of the nine areas reported under the Act as unhealthy in 1876, five have been practically cleared, those remaining are in a much worse condition than then, and there are other areas for which there is no effective remedy but demolition and reconstruction. Believing that a large number of the richer inhabitants have no idea of the depths of misery, filth, and degradation in which a large proportion of the population exist, I append a description of Plunket Street area, kindly supplied to me by Mr. Harty, C.E., assistant engineer to the Corporation, who acts as surveyor to the Artisans' Dwelling Committee of that body.

"Accordingly as the houses in Plunket Street area were taken over by the Corporation for demolition, they were found to be in a shocking state. House after house was in a most foul and filthy condition—which almost beggars description—and the stench through the houses was most intolerable from human filth, which was allowed to accumulate on the landings, stairs, floors, &c., and actually, when taking down the houses it was found that between the flooring boards and ceilings underneath, filth and dirt of all sorts were packed so tightly as to become one solid mass; holes were cut in shop floors so as to make a common privy, thus making the basement the receptacle of filth; floors in the drawing rooms and top storeys were partly removed, so that there was actually no privacy in several of the rooms, filthy chaff beds were found by me in several places emptied out on the floors, the inhabitants not taking the trouble to remove the rubbish into the back yards; the smell was so intolerable in some instances, that I had to leave the houses quicker than I went in. In a great many of the houses, especially in Blackball Row, old tubs, crocks, cans, and buckets were found filled with night soil, and hid away in the roof and other out of the way places, the removal of which was anything but pleasant to the men. The workmen were often literally covered with fleas, &c., and had to run away from their work and scrape each other's clothes down with sticks, in order to try and remove them, the colour of their clothes was hardly discernible. Beds and furniture of the simplest kind were a luxury unknown in several instances."

Bad as is the condition of things as described here, it is not a bit worse than large portions of the poorer parts of London; where, for example, in a street containing 41 houses inhabited by costermongers, 40 privies are utilised as stables for the donkeys and one is reserved for human beings.

b. Those portions of Torrens' Acts which refer to Demolition and Reconstruction (Artisans' Dwellings Acts, 1868 to 1882).—The comparative failure of 'Torrens' Acts in London may be attributed chiefly to the system of Municipal Government in that city, whereby the expense of working the Act falls on the local vestry as distinguished from the metropolitan area; to the absence from the original statute of any adequate provision for compensating the owner of property affected (now provided for by the Act of 1879); to the difficulties attending the dual control of the surveyor and medical officer of health in the measures to be adopted in the case of an unhealthy or obstructive building; to the inability to interfere with buildings "obstructive" but not unhealthy (now provided for by the Act of 1882), and to the numerous cases on the one

hand where the evil was so widespread as to require the application of Sir R. Cross's Acts, and on the other, where the object of the Act was attained by the commercial requirements of the district utilizing the sites of decayed buildings for warehouses.

It would be impossible within the limits of a paper such as this to give any summary of the provisions of Torrens' Acts, but it may be permitted to point out their special adaptability to Dublin, and the superiority of their measures relating to demolition and reconstruction over those of the Artisans' Dwellings Acts. The special applicability of Torrens' Acts to Dublin seems to me self-evident; and to say that it deals with the chief difficulties we have to meet is to recite the objects of the Acts. They relate to

1st. The demolition of unhealthy houses and reconstruction of suitable dwellings.

2nd. The demolition of houses not unhealthy in themselves, but rendering others unhealthy by reason of their proximity: and the opening up of courts and alleys by the removal of such obstructive buildings.

1. Everyone who knows Dublin will be struck by the large number of abandoned houses to be seen in comparatively respectable streets, and will not fail to observe the gradual injury inflicted by the condition of such houses on the adjoining ones. A great many of these houses have been closed by the medical officer of health as unfit for human habitation, or by the surveyor as structurally dangerous. I shall now only deal with those past repair. If the medical officer of health and the surveyor certify that the building is past repair and requires demolition and reconstruction, the owner or the local authority must take it down. The decision of these officers is final, and there is no appeal. This is a great advantage possessed by this Act over the Public Health Act, which requires the confirmation of a Justice's order before the house can be closed. If the owner elects to take down the house he may leave the site vacant if he wishes, but self-interest will be a sufficient guarantee in that respect. He can, however, call on the local authority to purchase the premises, in which case that body *must* take down the house, and *may* either erect labourers' dwellings or lodging-houses, dedicate the site to public health, or sell or let it without any special restrictions. For either of the first two cases they may borrow public money, but no greater rate than 2d. for one year can be levied. The purchase money is to be fixed by agreement or arbitration, and there is no appeal against the arbitrator's award. Here is a great advantage as compared with the Artisans' Dwellings Acts. In assessing the value the arbitrator is bound by the same principles as in Sir R. Cross's

Acts, with the addition that he must deduct from his award such a sum as will represent the increased value given to other premises of the same award by the demolition of the buildings in question.

The great difficulty which is met with in Dublin in carrying out proceedings under this Act is to fix the liability on the rightful owner. This difficulty has been specially recognized by the Act and is minimized as far as possible by giving every encouragement to the honest owner to come forward. We have seen how he can compel the local authority to purchase the premises condemned; again, if he chooses to carry out the works ordered he is entitled, on production of the surveyor's certificate that the work is done properly, to an order charging the premises with a mortgage for 30 years at 6 per cent. on his expenditure, and this is recoverable just as a rent charge; of course it is only the limited owner who benefits by this provision, as the security from which he draws the rent charge is the improved condition of his premises. The definition of the word "owner" must be specially noted. He is any person who is enabled to sell land or premises, and all lessees or mortgagees except persons who are entitled to the rents and profits for a less period than 21 years. The value of this provision can best be appreciated when we consider that in the Coombe area the amount awarded to tenants, including costs, who held for less than 21 years was £1,980 19s. 2d. or 12 per cent. of the entire award: and the justice of it will be apparent when it is remembered that a large proportion of tenement houses in Dublin is in the hands of those whose margin of gain is the difference between due regard for, and gross violation of, the laws of health and decency.

2. The widening and opening up of alleys, &c., and the removal of obstructive buildings.—There is a large number of courts and alleys in Dublin which would be greatly benefitted by the removal of the buildings between them and the thoroughfares, which not only obstruct light and air but cut off the inhabitants from the public gaze. In this way the richer inhabitants would be shewn under what condition so many of their poorer brethren live; and the occupants of these courts would gain from being more under the eyes of their fellow citizens. On this subject Miss Octavia Hill says, "A great deal of the degradation of these courts is because no public opinion reaches them, if you hear anybody talk about a *cul de sac*, and contrast it with any place that is a thoroughfare, you feel at once that it is the public opinion that affects the character of a court more than police or anything else; the same thing is done by higher class people living amongst them." The only differences in pro-

cedure between dealing with "unhealthy" and "obstructive" buildings are that in the latter the local authority may compel the owner to sell, in case he declines to demolish, and that in assessing compensation the increase of value of property of *other* owners caused by the demolition of the obstructive building is to be apportioned among such owners, and to be levied as a private improvement rate.

We see then that none of the conditions which conspired to impede the usefulness of Torrens' Act in London exist in Dublin, that on the contrary the condition and position of the homes of the working classes here renders an application of the Act peculiarly advantageous. The only improvement which appears necessary in the Act is the extension of its operations to more buildings than one, so as to effect the improvement of a block of houses in a street; and the recommendation of the Select Committee of the House of Commons to this effect has been to a considerable extent met by the provisions of sec. 6 of the amending Act of 1882, which lays down that where an official representation under Cross's Act refers to not more than ten houses, the local authority shall not take any proceedings on such representation, but shall direct the officer making same to report the case to the local authority under Torrens' Act, under which the local authority shall deal with the case.

c. Labouring Classes Lodging Houses and Dwellings Act (Ireland), 1866.—This Act provides for the advance of public money by the Commissioners of Public Works in Ireland for the objects stated in the title of the Act, subject to certain conditions for the repayment of such loans. The period of repayment is limited to forty years as a maximum, and the term of interest to 4 per cent. minimum.

The Public Works Loans Act, 1879, section 6, enables the Public Works Loan Commissioners (an English body) to lend money for the construction of dwellings and purchase of land, repayable within a period not exceeding fifteen years, and at a rate not less than $3\frac{1}{2}$ per cent. The Public Works Loans Act, 1881, which relates to Loans made by the Commissioners of Public Works in Ireland, enacts that the period of repayment and rate of interest of any loan made under the Act of 1866 may be such as is mentioned in that Act—viz., forty years and 4 per cent—or in the Act of 1879, viz., fifteen years and $3\frac{1}{2}$ per cent. Although the reduction of the rate of interest is a concession, the short period fixed for repayment makes it practically of no value, as in the case of a loan made by a public company the annual instalments of repayment would be so large as to unduly absorb the annual capital income.

In 1883 the directors of the Dublin Artisans' Dwellings Com-

pany made a representation to Government, requesting that the period of repayments should be extended to forty years, as in the Act of 1866, instancing the analogy of the Public Health (Ireland) Act, by which loans for sanitary purposes are granted at $3\frac{1}{2}$ per cent., and the repayments spread over fifty years; and offering, in case the application was granted, to largely extend their operations. The request was, however, refused.

d. Valuation.—The greatest bar to the improvement of the homes of the working classes in Dublin is the present anomalous condition of the valuation of property. This affects not only the provision of such dwellings, but the improvement of every class of buildings. The shortest way of indicating the present state of affairs is to give an example from each kind of property, although it might be sufficient to state that there has been no general revision of the valuation of the city for thirty-five years. There have been five commercial houses, in the vicinity of the leading business thoroughfares, lately rebuilt at a total cost of £12,750. Before their re-construction their valuation amounted to £532, now it is £925. Taking the rates and taxes at 10s. in the £1, the increased annual expenditure of the five investors under this head was £196 10s., or, at twenty-five years' purchase, £4,912 10s., or $38\frac{1}{2}$ per cent. on their outlay on buildings. Possibly they would not have objected to this, but that the proprietors of the adjoining places of business who did not care, or were not bound to rebuild their premises, have their valuations unaltered, although they derive considerable benefit from their neighbours' improvements.

Passing to the homes of the working classes, and selecting at random seven tenement houses in various parts of the city, and seven improved dwellings, the valuation of each being the same, viz., £9, or £63 for all, I find the annual rental of the old houses to be £322, of the new £118. That is to say, the proprietors of the tenemental dwellings contribute 10 per cent. of their income to the rates, while the owners of the new dwellings pay 27 per cent. of their income to the rates. This inequality presses on the very class we are supposed to be benefitting, as the following facts will show. I have investigated the present and former rents paid by 427 of the tenants of the Dublin Artisans' Dwellings Company, and find the present rent to average 5s. 3d. per week, the former rent 4s. 3d. Dividing these gross rents into the two items of "rent" and "taxes," and applying the proportion of taxes to rent given above, it will be seen that the "rent" of the new dwelling is 3s. 10d. and taxes 1s. 5d.; while the "rent" of the tenemental dwelling is 3s. 10d., and taxes 5d.; it will be therefore seen that the extra price which the tenant pays for the

improved accommodation is made up entirely of increased taxation. In ninety cases the Company have been able to let their dwellings at a lower rent than those of the tenement houses, and in these cases the inequality appears still stronger. The gross rents in the old dwellings average 5s. 2d., in the new 3s. 7d.; subdivided, the former consist of rent 4s. 8d., taxes 6d.; the latter, rent 2s. 8d., taxes 11d. It may be urged that in payment of taxes, artisans' dwellings and tenement rooms are not strictly comparable, as the entire taxes have to be paid in tenement houses, if any portion of them be occupied, whereas artisans' dwellings are rated separately, and "vacancies" are allowed for. This advantage, however, is more than counterbalanced by the disadvantage under which artisans' dwellings labour, viz., that their higher rent removes the tenant from the control of the "Summary Jurisdiction Act," and makes him, though nominally a weekly, practically a quarterly tenant. The inequality of taxation for all such improvements presses with special severity on all sections of the lower classes in Dublin, for the very large proportion of new buildings erected for the past few years is for the lower middle and working classes. In many of the English towns special provision is made for the assessment of dwellings of the working classes, but in Dublin the homes of the rich and poor are valued under the same law. Whether the principle of taxation of improved dwellings for the working classes is just, will no doubt soon form the subject of serious discussion, but, be that as it may, it cannot be denied that a revaluation of Dublin is, in the interest of all classes, imperatively demanded. There are, however, three great obstacles in the way:—

1. The Acts which relate to the valuation of property in Ireland (15 and 16 Vic., cap. 63; 19 and 20, cap. 63; 23 and 24, cap. 4; 27 and 28, cap. 52; and 37 and 38, cap. 70), provide for a general revaluation after the termination of the first general valuation commenced in 1849, or of seven years after the date of the Act of 15 and 16 Vic. This revaluation can only be made by order of the Lord Lieutenant on the application of the grand jury, which application is voluntary; and no such application has been made by any grand jury, for reasons which it is not now necessary to dwell upon.

2. Even if the application were made and a re-valuation ordered, there is no provision for the cost. It is true that a small proportion of the cost of an *Annual Revision* is paid for by each county or city grand jury according to a schedule appended to 37 & 38 Vic., cap. 70; but the annual contribution for this purpose is for the City of Dublin only £200, while a general re-valuation of Dublin would cost a sum considerably in excess of that, and for which there is no legal provision.

3. If a re-valuation were ordered, and the expense provided for (which can only be done by legislation), the effect would be, as far as Dublin is concerned, unequal and unjust. The valuation must be made according to unions or baronies, and the boundaries of these areas are not conterminous with those of the municipal district. The result would be that if the city were re-valued the new valuation would be much out of proportion to the existing valuations of the portions of the North and South Dublin Unions that are outside the city.

III. The statutes relating to the proper maintenance of existing dwellings.

In considering this branch of the question it may be premised that the proper maintenance of existing dwellings can be effectually attained by the administration of legislation in force and applied, or by the application of existing legislation.

The number of tenement houses in Dublin is being constantly increased by the conversion of single dwellings; and diminished by natural decay, demolition, or by being closed for want of sanitary accommodation. We have seen that the latter process is more rapid than the former; and, as it has been dealt with in discussing demolition and reconstruction, I shall confine my observations to the comparatively new and repairable tenement houses, dealing with each class under the statutes referred to, viz:—

1. Public Health Act.

2. Torrens' Acts.

1. *Public Health Act (Ireland) 1878.*—The powers given by this Act are extremely comprehensive, and the bye-laws under them relating to tenement houses sufficiently stringent. Commencing with those tenement houses which are converted from dwellings for one family, I should like to see the bye-laws put in force so as to prevent the occupation of such until the structural alterations necessitated by the changed condition of the house were carried out. Section 43 of the Act seems to exactly meet such cases; it brings under the definition of "new building" for which there are ample bye-laws as to the provision of light, air, and proper sanitary accommodation, "the conversion into more than one dwelling house of a building originally constructed as one dwelling house only." It has been urged that this provision does not refer to the alteration of private dwelling houses into tenement houses, and I shall therefore refer to the action taken in this matter by another city which has to deal with the tenement house evil. In Liverpool up to 1882 the corporation had no power whatever to prevent an owner from altering a private dwelling house so as to make separate sets of rooms in it, but by their Improvement Act of 1882, if any such conversion were now attempted the owner

would become liable to the provision of the building regulations enacted in the same statute, and the corporation could then step in and insist upon proper space for light and ventilation, &c., being given to each tenant, and due provision being made for the segregation of different sexes. The definition of a "new building" in the Liverpool Act is, word for word, the same as that in the Dublin bye-laws quoted above.

Prevention is, in this case, much easier than cure, and the due administration of the bye-law referred to would have the effect of encouraging the owner to take the management of such property in his own hands, of checking the creation of the middleman or house jobber, or by preserving the house as a habitation for a single family, would diminish the supply of tenement houses. As I was anxious to illustrate the necessity of preventing the alteration of single dwellings into tenement houses without (either under the Public Health or Torrens' Act, or, if necessary, by new legislation) enforcing structural alterations necessary for its converted state, I selected a house at random in one of the finest thoroughfares in Dublin, and which has been converted within the past year into a tenement house, and through the kindness of Dr. Cameron, medical officer of health, am enabled to place on record its present condition; The house is occupied by nine families, but is in good order. the cubic space per head is not less than 300ft., and the house may be taken as a very favourable example of the tenemental dwellings in Dublin. Six rooms are occupied by as many families, containing 47 persons, and three rooms are occupied by three families, containing eight individuals. In the back kitchen live a family of six, father, mother, and four sons, the eldest of whom is 17, the youngest 10. The second floor front room is occupied by a family of ten, of which two are men over 25, two boys from 14 to 16, and three women from 23 to 40. In the top front room live another family of ten, comprising two males, one 19 the other 40, and four females, aged 10, 12, 14, and 36; and in the top back live a man, his wife, her mother, and a baby. All of the other rooms are occupied by families with children under 13 years of age.

With those houses, which have already been converted without any structural alterations, the task of the sanitary authority is much more difficult. While a large number of tenement house owners systematically evade the law in Dublin, there is a large number who honestly endeavour to do their duty, and to encourage whom should be the policy of the sanitary authority. Although under the Public Health Act the owner or occupier may be proceeded against for the creation of a nuisance, it is always the owner who is held responsible for every kind of

nuisance, whether owing to structural defects or wilful destruction by the occupier. In the former case it may be just that the owner should be proceeded against, but it does seem a hardship that he should be held liable for nuisances altogether attributable to his tenants. It is true that there are bye-laws under the Public Health Act, by which a tenant may be prosecuted for misusing any appliance or depositing refuse, but the onus of bringing the prosecution and proving the case lies on the landlord, and I know of only one such prosecution being instituted under these bye-laws since their adoption in 1882. If an occupier is detected in throwing filth on the public thoroughfare he is proceeded against by the authorities, and there are special officers of the cleansing department of the corporation employed in detecting such cases; and it would be equally just, and would render the task of the sanitary inspector lighter in future, if the occupants of tenement houses were summoned in the case of a nuisance in the house, evidently due to their own wilful neglect or commission. In many English and Scotch towns, although the landlord is held liable for all structural defects, the tenants are proceeded against in the case of a dirty house, and this seems to be the spirit of the legislation on the subject.

There are, however, many cases of tenemental dwellings which cannot be effectually dealt with under the Public Health Act, and which require the application of

2. *The Repairing portions of Torrens' Acts (Artisans' Dwellings Acts, 1868 to 1882).*—If the local authority decide, on the reports of their medical officer of health and surveyor, that a house is dangerous to health, and that evils can be remedied by structural alterations, the owner upon whom the responsibility of executing the repairs devolves must carry out the works specified by the surveyor to his satisfaction, or pull down the premises. If neither he nor the other owners interested do so, the local authority must close or demolish the house, or may execute the necessary repairs. They are empowered to recoup themselves the expenses of demolition by selling the old materials, retaining the proceeds, and recovering the balance from the owner as an ordinary debt; and in the case of repairs they may apply to the Court of Quarter Sessions for an order charging the premises with all costs incurred, and with an interest of 5 per cent. The owner may, however, as in the case when ordered to demolish, compel the local authority to purchase on the terms previously explained.

It may be urged that alterations and repairs can be enforced under the Public Health Act. The improvements effected under that Act refer chiefly, if not solely, to the provision of

sanitary accommodation, and to the maintenance of the fabric of the house, whereas the alterations contemplated by Torrens' Act refer rather to those necessary for the introduction of light and air, and for the separation of the sexes, &c. Even if these improvements could be effected under the Public Health Act, their enforcement would cause great hardship on the owner, while under Torrens' Acts there is every encouragement given to the owner to carry out the necessary works. It must not be forgotten that the difference between the "owner" of Torrens' Acts and the "owner" of the Public Health Act is very wide. Under the latter Act the owner is frequently a person who has a very short lease of the premises, and it would be obviously unfair to expect him to carry out permanent improvements, the benefit of which he will not reap. Indeed, the provision of improved sanitary accommodation involving drainage and water supply, under the Public Health Act, often presses so heavily on this class that many of them cannot afford to carry out the works, and the local authority has no alternative but to close the house. The worst use to make of a repairable house is to close it, and the result is seen in many of our streets where houses derelict are removed piecemeal, to the great injury of adjoining property, and to the demoralisation of the inhabitants.

Now, under Torrens' Acts, the responsibility of carrying out work is limited to those who hold for more than 21 years, and such owner who carries out the works to the satisfaction of the local authority is entitled to an order charging the premises with an annuity of 6 per cent. on the amount expended, payable for 30 years. Again, in the case of the derelict houses just referred to, the owner, as defined by Torrens' Acts, might be very willing to step in and do the repairs, but under the Public Health Act he is met by the short lease of his tenant, and if he proceeds for the legal recovery of his property, he finds, by the time he gets possession of it, there is nothing left but the site. Under Torrens' Acts, however, in the case of default by the owner on whom the responsibility for carrying out the works depends, any other owner who is interested in the premises can, on supplying proof that he will carry out the works directed, obtain an order justifying his entry on the premises, and his execution of the works in the face of any rights of possession.

Under the Public Health Act we often meet with the owner who evades the duties of property, and shields himself behind the house jobber, to whom he lets the house for a short time, without the slightest restrictions as to occupancy. If Torrens' Acts be applied, he will find it necessary to retain the manage-

ment of his property in his own hands, or to let it for such a term, and at such a rent as will convert his tenant into an owner under those Acts, and give him a margin of profit sufficient to improve the sanitary condition of the premises.

For the reasons given the application of the repairing portions of Torrens' Acts in Dublin seems desirable. The only amendment which appears necessary, is the withdrawal of the right of the owner to compel the local authority to purchase his premises when they order the execution of repairs. It is quite fair to give this power to the owners when demolition and reconstruction are directed, as these may necessitate a large expenditure of capital, for which he may not be prepared, and will cut off his income during the process, whereas, the cost of carrying out structural alterations will not generally be large, and there will be practically no interference with the owner's income.

I have now referred to the principal measures dealing with the supply of new, and the maintenance of existing dwellings for the working classes. There are two statutes which affect incidentally, but to a very important extent, the supply of dwellings of both classes; and without a reference to which this paper would be incomplete.

The statutes are, The Summary Jurisdiction Act and the Improvement Act.

I. *Summary Jurisdiction (Dublin) 1851.*—This Act regulates the recovery of possession of small houses or tenements; it is limited to dwellings let under £12 per annum; and the possession of houses let at a higher rent can only be recovered by proceedings at Quarter Sessions. This limit is altogether too low. In London it is for similar proceedings £20 per annum, and there is no reason why it should not be raised to the same figure in Dublin. There are a large number of such dwellings in Dublin let at 4s. 6d. per week, and much below their value, simply because the owner shrinks from the liability to the large expense and loss of time incurred by proceeding at Quarter Sessions. The proceedings necessary to get rid of a tenant before the Court of Summary Jurisdiction occupy five weeks at the least, and practically involve the loss of seven weeks' rent; and the proceedings necessary to get rid of a tenant who pays more than 4s. 6d. per week occupy on an average three months. During all this time no rent is paid, and the property of the unfortunate owner is liable to the grossest injury without any practical means of redress. It is a well-known fact that there are tenants in Dublin who go from tenement to tenement, never paying one week's rent from year to year, and very often getting money from the landlord to give up possession. Every facility should be given to the landlord of tenement property

to recover possession of his premises when it is considered how worthless is his security for rent and how great the risk of damage to his property. The condition of the law on this subject is one of the greatest practical bars to the improvement of the dwellings of the working classes.

II. *Improvement Act (Dublin) 1849.*—By Sec. 120 of this Act, the Town Council are empowered to compound with the owners of premises rated under £8 upon a reduced estimate of such annual value, not being less than two-thirds or more than four-fifths of the net annual value, at which the premises are then assessed, as the Council may think reasonable. Similar benefits are conferred on owners of such property in English towns, and in Liverpool there is not only a remission of 15 per cent. of rates to landlords of such property, but a further allowance of 10 per cent. to landlords who collect the rates from such buildings, and pay the entire amount, taking the risk for vacancies. In Belfast, under the differential system of rating very substantial advantages are afforded to houses rated under £20; and in the case of houses rated under £8 a discount of 25 per cent. for prompt payment of taxes is also allowed. The Corporation of Dublin have been requested to put in force the section of the Improvement Act referred to; and there is no doubt that its application would afford a great impetus to the erection of dwellings for the working classes, regard being specially had to the high valuation of such property. But it appears more than doubtful that the authority given under this Act can affect any rate not struck under the Act. If this view be correct the only relief which could be granted would be in respect of the Improvement Rate; and this being less than one-fourth of the entire rates of the city, the concession, if yielded, would confer but a very trifling benefit. Under such circumstances amendment of the law in conformity with that of Belfast is urgently required.

There is one great difficulty in Dublin in carrying out improvements under either Sir R. Cross's or Mr. Torrens' Acts, and that is that the area of taxation being limited the cost of such improvements presses heavily on the ratepayers in the municipal district. Without touching the question of the extension of the boundaries of that district, it may be pointed out that it would be not only equitable, but an act of self-interest in checking the spread of disease, for the townships outside the city to contribute to the cost of such work.

III. HOW THE WANT HAS BEEN SUPPLIED.

I append a summary of the accommodation provided by the different agencies in Dublin during the last 10 or 12 years.

Erected by.	Place.	No.	Description.	Rent.
Dublin Artisans' Dwellings Co., Limited	Temple Buildings...	56	3 roomed tenements	4/3 to 5/3
	Echlin St. " ...	24	3 " "	4/3 " 4/6
	" " ...	8	2 " "	2/- " 2/9
	" " ...	4	1 " "	2/6 " 3/-
	Buckingham " ...	50	2 " "	2/6 " 4/-
	" " ...	30	3 " "	3/- " 5/-
	Temple Cottages...	23	4 " cottages...	5/- " 5/6
	Kirwan St. " ...	41	4 " "	7/6 " 8/-
	" " ...	47	3 " "	4/- " 6/-
	" " ...	36	2 " "	3/6
	Buckingham " ...	6	4 " "	5/6 to 7/-
	Coombe " ...	48	4 " "	6/6 " 7/-
	" " ...	90	3 " "	4/- " 6/-
	" " ...	66	2 " "	3/6 " 4/-
	Portobello " ...	105	4 " "	8/- " 8/3
	" " ...	49	3 " "	5/6 " 6/-
	*Harold's Cross Cot.	76	2 " "	4/-
	" " ...	76	3 " "	4/6 to 6/6
	*Rutland Street " ...	26	2 " "	4/-
	" " ...	17	3 " "	6/3 to 6/6
	*Infirmity Rd. " ...	91	2 " "	4/-
" " ...	52	3 " "	4/6 to 6/6	
" " ...	21	4 " "	8/-	
Great Southern and Western Railway Co. of Ireland	" "	141	6 " "	3/6 to 6/6
Midland Great Western Railway of Ireland Company	Constitution Hill ...	6	1 " tenements	-/6 " 1/6
	" " ...	17	2 " "	1/- " 2/6
	" " ...	7	3 & 4 " "	1/6 " 4/-
	" " ...	12	2 " cottages...	1/- " 2/6
	" " ...	14	3 " "	1/- " 4/-
Industrial Tenements Co.	Monck Place.....	42	5 " "	2/- " 5/-
	South Earl Street...	44	1 to 3 " tenements	6/6 " 7/-
Messrs. A. Guinness, Sons, & Co.	Bellvue	51	2 " "	2/- " 4/6
	"	15	4 " "	3/-
On ground of Messrs. Lombard & MacMahon ...	South Circular Rd...	450	Cottages & tenements	under 5/-
	N. and S. Suburbs...	83	3 roomed cottages...	6/-
	" " ...	125	4 " "	6/-
Thos. Vance, Esq. J.P.	" " ...	800	Larger	10/-
	Bishop Street and Kevin Street	144	1 & 2 " "	3/9
	Chapel Alley and Cook Street	38	2 " "	2/8
	Henrietta Street ...	14	1 & 2 " "	3/6

It will be seen from the above summary that accommodation has been within a comparatively brief period provided, or is being provided, for 2,152 of the artisan and labouring class, and for 800 of a slightly superior class; in all, 2,952 families, representing about 16,000 persons.

CONCLUSION.

Summarizing the views put forward, it appears that the twofold want in Dublin, viz., the demolition of old and substitution of new buildings, and the maintenance of repairable dwellings, can to a very great extent be met by existing legislation. The special laws on the subject—Sir R. Cross's, Mr. Torrens', and the Labourers' Dwellings Loans Acts—have been greatly improved within the past few years, and the most important alterations still required in them are perhaps, in Sir R. Cross's Act the abolition of appeal to jury; in Mr. Torrens' Act the extension of its provisions to more buildings than one, so as to effect the improvement of a block of houses in a street, &c.; and in the Labourers' Dwellings Loans Act the advance of money to companies and associations for the purpose of building labourers' dwellings, on the same terms as those which regulate loans for sanitary purposes.

But where new legislation is of far more importance, as regards Dublin, is in the alteration of those laws whose present condition tends to prevent the investment of money on purely commercial principles in the provision of dwellings for the labouring classes; I refer to the Valuation, Summary Jurisdiction, and Improvement Acts, the alteration of those portions of which referring to the subject, so as to be in conformity with the present necessities, and with the existing law in similar cities, is imperatively demanded.

While, however, legislation is so far responsible, we must not shut our eyes to the fact that an immense amount of improvement can be effected in the homes of the working classes in Dublin by the application of existing legislation, and by the administration of legislation existing and applied. There is great necessity not only for extended operations under Sir R. Cross's Act, but for a well-considered application of Mr. Torrens' Act to several streets on the north side of the city, which are at this moment adding private house after house to the list of tenement houses, each house not only altogether unsuited, but absolutely unfit for human habitation as a tenement house, and sowing seeds of never-ending trouble for the Sanitary authority.

And, in addition, there is required a vigorous and discerning

enforcement of the existing sanitary laws, vigorous, in insisting on due observance of the laws of health, not only in the yard but in the garret; discerning, in not unduly visiting the sins of the tenant on the landlord. But the administration of Sanitary Laws by the Local authority depends on public opinion, and there is no doubt that within the past few years the action of the Sanitary authority in Dublin in effecting improvements has been distinctly in advance of a large mass of the public opinion on the subject, and it is worthy of notice that Dublin is one of the three cities in the United Kingdom which have carried out more than one improvement scheme under Cross's Act.

To educate that opinion among both the rich and the poor, to teach the rich the condition under which the poor—180,000 of them—live in tenement houses, so that the hands of the Sanitary authority and of public and private enterprise may be strengthened in improving that condition; and to teach the poor how they should live is the special province of Sanitary and Health Associations, and the bounden duty of every one acquainted with the Laws of Health. There is nothing more disheartening than to provide improved dwellings for those who do not seem to value them, and who do not know how to use them.

While many of the working classes eagerly embrace the opportunity of improving their domestic condition, afforded by the provision of new dwellings, there is, as is natural, a great deal of ignorance, of prejudice, and of obstinacy to be met with, and there is a large population in Dublin whose opinions on the subject of improved dwellings may be indicated by the aspiration of the old woman who, after gazing on the rows of new cottages in the Coombe thoroughfares, exclaimed, "God be with the good old times when there were no knockers on the hall doors!"

Dr. W. J. SIMPSON (Aberdeen) remarked that tenemented houses were one of the greatest difficulties sanitary authorities had to deal with. A building which had been occupied by perhaps two or three people, was converted into one of these dwellings, and after a time they might find a family occupying each room. A great deal would be gained if anything could be done by legislation to give powers to local authorities to limit this process of subdivision, and to force landlords who contemplated any such change in their property, to bring their plans before the authorities. An important point also for consideration was the non-liability of the tenant, who might wilfully destroy sanitary arrangements put thoroughly in order by the landlord, the sanitary authorities coming upon the owner of the house to repair the same.

Dr. J. F. J. SYKES, Honorary Secretary of the Section (London), stated that he had been "slumming" in Dublin, and had never seen wider streets, wider courts, or wider alleys and slums elsewhere. The closes were so narrow in some of the Scotch towns, that people could not pass one another in them. In Dublin the buildings were only two or three stories high, while in Edinburgh they were twelve or even fourteen storeys in height. The greatest objection to the Dublin slums was that they were nearly all *culs-de-sac*, so that no wind draughts passed through them, and they were not likely to be visited by persons who would desire to institute changes. Again, if a slum were a short cut, the respectable persons passing through would have an improving influence upon the inhabitants. Wherever therefore there were houses, there should be a thoroughfare. It would be a mistake to pull down blocks of two-storied houses with fairly wide thoroughfares, in order to erect blocks of model dwelling-houses of many stories with narrow streets.

Mr. F. PIM (Dublin), in reference to one point in the concluding portion of the paper, dwelt upon the necessity for greatly improved facilities for dealing with non-paying tenants. Surely some means could be devised for meeting the difficulty. He had inspected many lanes and alleys of the city during the earlier years of the Sanitary Association, and nothing had struck him more than the number of them which led nowhere, but some improvement had taken place in this respect since the Association commenced its operations. Nothing tended more to eradicate evils of this kind than the letting in of the light of day and of public opinion upon them. A simplification of legislation in connection with the whole matter was urgently needed.

Mr. PARKE NEVILLE, C.E. (Dublin) thought there should be greater facilities given for obtaining possession of premises where improvements were about to be made.

Mr. R. O'BRIEN FURLONG (Dublin) said one thing had rather surprised him, having regard to the population of the city and the increased accommodation provided for the working classes, and that was the small decrease in the number of tenement-houses. This small decrease was, he thought, due to the fact that as some tenement-houses were closed, other houses which had previously been private residences, were converted into tenements. He gave instances in Dublin where large houses once occupied by professional men had thus changed for the worse, and thought it would be a very good thing if something could be done to prevent this deterioration. He did not know, too, whether the Sanitary Association could do better than to promote legislation on the question of valuation raised by Mr. Spencer, and with a view to getting rid of bad tenants, cheaply and expeditiously, as suggested by Mr. Pim.

Mr. W. STIRLING, C.E. (Dublin) thought it would be a good thing if encouragement were given to tenants to keep their places clean and in order, by holding out some such inducement as the prospect that the rent would be reduced after continued good tenancy.

Dr. T. W. GRIMSHAW (President of the Section) approved this suggestion, and mentioned that the Brabazon Prizes had created a vast improvement in artisans' dwellings.

Mr. EDWARD SPENCER (Dublin) in reply, remarked that such a case as had been mentioned by Dr. W. J. SIMPSON could not arise under the amending Artisans' Dwellings Act, as no compensation was allowed for transactions taking place after notice of purchase had been given. The Act had been greatly improved in this and many other respects since its application in Dublin in 1876-9, but it had acquired a very bad name, which was difficult to be got rid of. He thanked them for the favourable reception accorded to his paper.

On "The Recent Progress made in some Branches of Ambulance Work," by V. B. BARRINGTON-KENNETT, M.A., LL.M., Deputy-Chairman St. John Ambulance Association.

I propose to deal with the subject of my paper under two heads.

First. The work of the St. John Ambulance Association, with its extended organization of classes for teaching the principles of first aid to the injured and of home nursing, and the advance made by it in the design and construction of stretchers, litters, and other ambulance material; also its organization of corps of trained men qualified to use this material for *non-infectious* cases. *Secondly.* The recently organized ambulance system of the Metropolitan Asylums Board, insuring the rapid removal by road and river of persons suffering from small-pox and other *infectious* diseases from our crowded metropolis to be treated in the floating hospitals and convalescent camps established some twenty miles down the river, below London Bridge.

When I tell you that the result of the work of the St. John Ambulance Association is a little army of over 50,000 certificated pupils, while ambulance waggons and steamers of the Metropolitan Asylums Board, during the months of June and July last, were carrying infected persons away from London, and re-conveying them home when recovered, at the rate of nearly 400 a week, you will see that I have attempted a somewhat ambitious task, and can only touch slightly some portions of my subject.

At the risk of telling some of you what you know already, let me remind you that the principal object of the St. John Ambulance Association is to teach people what to do, in case of an accident or sudden illness, until the doctor comes; also to teach women how best to co-operate with the doctor in the

sick-room, by carrying out his instructions systematically; and by proper attention to matters of ventilation and sanitation to add to the comfort of the patient, and increase his chances of recovery.

The endeavour of the association has been not to rival, but to aid the doctor in his noble work; the best proof that it has partially succeeded in this is the active and earnest co-operation of the medical profession throughout the length and breadth of the land. Distinguished medical men are to be seen taking a prominent part at the various ambulance meetings held at our centres of industry and population, while many spend their valuable time in giving gratuitous lectures to those who cannot afford to pay the customary attendance fees.

Although the information imparted in the lectures is useful to high and low, rich and poor, yet experience has shown that to certain classes it is of special importance. Among such I would place the police, railway servants, and working-men in colliery and other industrial districts. The knowledge of what to do in the sick-room ought to form part of the education of every woman, and is of the first importance to those who have, or look forward to, the responsibilities of family life.

It is very satisfactory to find that the recent growth of the movement has been most rapid among those classes of the population to whom it has been found most useful. Of the 200 centres formed in different parts of the United Kingdom, every one with its own committee and officers, many are found in the midst of our crowded industrial populations. Among the collieries in which such organizations exist, I may mention Blackwall, Claycross, the Eckington Collieries, Grassmore, Littleshall, South Shields, Tibshelf, and Darlington, while a complete system of instruction is being carried out in the North Wales collieries at Ffrwd, Plas-Power, Wrexham, and Wynnstay.

Very few of those who are not personally acquainted with the mining districts have any idea of the number of accidents which happen, I may say, day by day. In a return furnished to Surgeon-Major Hutton by the Secretary of the Miners' Association, it is stated with reference to the Cleveland and North Yorkshire iron and mining districts, that during the year 1883 there were 847 non-fatal and 29 fatal accidents, making a total of 876 in those districts alone. The report states: "If we make a very moderate calculation in relation to the accidents which have not been reported, we arrive at the startling fact that one person has been injured or killed during 1883 for every eight employed in and about the Cleveland Mines." Again, it is reported that out of 224,000 members belonging to the various

societies in our mining districts, 44,579 cases of injuries were relieved during 1883; while at one of the recent St. John Ambulance meetings at Wigan, Lord Crawford and Balcarres stated that there could be no doubt that on the average no fewer than 100,000 accidents, large and small, occurred throughout the mining districts of this country every year.

Want of space will not allow me to discuss the subject from an economic point of view, but I believe I could prove that the employers of labour would be large gainers by encouraging ambulance classes among their employes, especially since the passing of the Employers' Liability Act. As an example let me quote the case of a firm which paid over £1,300 compensation for injuries received by their workmen during 1883. Last winter, however, they introduced ambulance classes among their men, and formed a little depôt of ambulance material on their works. The secretary, in preparing the report of these ambulance classes, called the attention of the committee to the remarkable diminution in the number of injured men coming forward for compensation, thus proving that in that case, at least, it had been well worth the employers' while to educate their men in "First Aid to the injured."

As instances of the valuable aid rendered by certificated pupils in the collieries, I will quote a few cases reported from the coal districts. The following entries are made in the Ambulance Report Book of the Eckington Collieries, Derbyshire:—

Case.	Surgeon Jones' Report.
(1). Large lacerated wound in back.	"This patient, although he subsequently succumbed to his injuries, was most comfortably removed, and his sufferings were much alleviated."
(2). Fractured base of skull.	"Found this man comfortably settled in bed."
(3). Face burned by explosion of powder.	"These burns were well dressed with oiled lint."
(4). Fractured thigh.	"Most satisfactorily put up with splints."
(5). Fractured ribs and bruised shoulder.	"This was a very serious case of fractured ribs and wound of lung. Sent home very comfortable in litter, with broad roller bandage round chest."

The following cases are reported from the Tibshelf Colliery:

<i>Nature of injuries.</i>	<i>Report.</i>
(1). Wrist run over and artery divided.	Sent to Chesterfield Hospital without removal of improvised tourniquet.
(2). Ankle cut by a scythe.	Tourniquet applied to femoral artery, and sent home.
(3). Run over by a railway waggon.	Tourniquet applied to femoral artery, and sent to Chesterfield Hospital, without its being found necessary to alter the tourniquet.

In the Heavy Woollen District, including Dewsbury, Batley, &c., classes have been formed to provide against the many accidents which occur, while the operatives engaged in iron and other industries have the opportunity of passing through the course at such centres as Middlesborough, Leeds, Keighley, Bradford, Sheffield, and Manchester. It is known that many of our sailors go to sea in ships which carry no medical man; accidents will, and do often happen on board; how valuable in such cases is a little knowledge of what to do. In view of extending the movement among our merchant marine, classes have been formed at Portsmouth, Greenwich, West Hartlepool, Liverpool, Grimsby, Newcastle, and other seaports. At the same time large classes have been formed at some of the London and other Docks, and the brewers of Burton-on-Trent and in the East of London have shewn a good example in encouraging the formation of classes among their numerous employés.

While alluding to the work done by these various centres, I must not omit to thank those who have so ably and successfully carried out the ambulance movement in this city (Dublin). No fewer than 3,256 persons have been passed through the course, and 128 men and women have, by a system of annual re-examination, qualified for, and obtained, medallions.

With regard to the police, in the London metropolitan district alone nearly 1,700 police have gone through the course, and so important is the instruction considered, that H.M. Government grant an annual subsidy towards defraying the expenses of the police classes at Scotland Yard and elsewhere. The officers and men of this force, of all grades, volunteer in large numbers to attend the lectures. Truly they deserve our hearty thanks when we remember the frequency of accidents in our streets, and how the duty of conveying the unfortunate sufferer to his

home or hospital usually devolves upon the police. Let me quote one or two cases at random to show the good work they have done:—

Only a few months ago Police-Constable Pearson, a certificated pupil, had found a man suffering from hæmorrhage, caused by the bursting of a varicose vein. Pearson's prompt action in arresting the bleeding and conveying the man to the hospital probably saved that valuable life. I am glad to add that Dr. Urwick, the acting house surgeon of Westminster Hospital, testified by letter to these good services rendered. Again, in May last a Local Inspector of Police at Liverpool found a sailor lying in a low suburb with his right leg fractured. Procuring some pieces of wood, the officer extemporized a splint, bandaged the limb, and conveyed the patient to the Royal South Hospital, receiving the thanks and compliments of Dr. Allan, the Resident Medical Officer. In January last at Liverpool, an old man was run over by a cart and his leg was badly fractured. A police constable, who had recently passed through the course, applied splints and bandages, and awaited the arrival of a doctor from the Northern Hospital, who highly complimented the policeman, and said that, had it not been for his ready treatment, death might have ensued.

Many of you remember the fatal railway accident which occurred between Preston and Wigan last year. At the scene of accident, and in the conveyance of the injured to Wigan and Manchester, many of the certificated pupils of the Association were enabled to render valuable services. A local paper tells us "The excellent system of the St. John Ambulance Association was conspicuously serviceable. Mr. Tongue, the Assistant District Superintendent, Mr. Taberner, the Wigan Stationmaster, and several of those actively assisting, are holders of the certificate of the Association, and in directing those who were not so qualified to render aid to the injured, carrying and lifting the injured, utilizing litters and stretchers of the Wigan Centre, they repeatedly elicited very hearty praise from the surgeons." I quote this case as one specially interesting, from the fact that the police, the railway officials, and several Wigan workmen, were all at the same time putting to such good use the knowledge gained at the lectures. Indeed, the number of instances in which efficient first aid is rendered are of such frequent occurrence, that scarcely a week passes without one or more authenticated cases being reported.

The movement has not been confined to the United Kingdom. That which has been found so useful here, where we have doctors within, at most, an hour or two's call, is considered by thinking men all-important in countries where hours and

perhaps days may elapse before qualified medical aid can be secured. Some practical friends in Australia have accordingly initiated classes on a large scale in two districts of New South Wales, while in Bombay last year I had the gratification of initiating the formation of centres in India, with a committee, under the presidency of the Governor of Bombay, Sir James Fergusson, and comprising the leading Europeans and Hindoo, Mussulman, and Parsee natives. Contrary to the foreboding of some experienced Anglo-Indians, that fine body of men the Mahratti police were the first to volunteer passing through the course, and took the keenest interest in the work. Can it be doubted but that instruction such as this, instruction directed towards the saving of human life, and the relief of physical suffering, can have any but a humanizing and civilizing influence upon the native population, instilling into them those qualities of helping the weak, and relieving the suffering, which it is one of the main objects of our Christianity to impart. Endeavours will be made to extend the knowledge among the female members of native families, who, owing to custom or prejudice, have been brought up in entire ignorance of the first principles of health, and of the most elementary rules of home nursing.

To turn to the West Indies, see how cordially Lady Brassey, in her "Sunbeam," was lately received while planting and extending St. John Ambulance work among the islands—a ray of light indeed to those who were in so much darkness there. After starting the movement in Madeira, Lady Brassey visited Trinidad, where the governor and leading colonial authorities at once took up the movement warmly, and a crowded meeting was held. At La Guayra and Caracass the movement was introduced under the auspices of the British Minister. Jamaica was visited with a like object, and then passing on to Nassau, New Providence, Lady Brassey had the satisfaction of initiating the work with an enthusiastic meeting under the presidency of the Governor, Sir C. Lee. Similar success attended the visit to Hamilton, Bermuda, and Lady Brassey states that she has most satisfactory reports from other islands and places, including St. Vincent, Barbadoes, Basseterre, St. Kitts, and from British Guiana, which she was unable to visit, but with which she had been in correspondence.

Our American cousins have not been slow in recognising the good practical results of the classes, and we hear of a large and extending system of lectures based on an organisation similar to that of the St. John Ambulance Association.

Mainly through the exertions of Mr. John Furley, Deputy Chairman of the Association, an important advance has of late

been made in the matter of improved stretchers, litters, and ambulance waggons for the removal of sick and injured persons. I refer especially to the "Furley" stretcher, with or without telescopic handles, and the "Ashford" two-wheeled litter, with which many of our police-stations are provided. The "Lowmoor" Jacket has been introduced, which is intended to meet the difficulty of removing injured men from those coal pits in which the cages are too small to receive a stretcher in a horizontal position. By its means a man with even a fractured thigh can be put into a perpendicular position, and thus drawn through a narrow shaft. Special ambulance hampers have been arranged, and are provided for factories, collieries, mines, and railway purposes.

One of the Furley waggons has lately been established in connection with the Northern Hospital of Liverpool, and is the first vehicle for accidents worked in this country on the American principle. The station where it is kept is in telephonic communication with all the police stations in Liverpool. American clip harness is used, and the average time taken to get the carriages equipped is two minutes. Nearly 500 calls were made for this waggon during the first eleven months of its installation. Though we have no such complete organization in London (except for infectious cases under the Metropolitan Asylums Board) yet the St. John Ambulance Association has provided wheeled litters at most of the principal police stations, which are frequently used by the members of that force, and are also at the disposition of the public in case of accidents.

Another important branch of work on which the St. John Ambulance Association has recently been engaged, is the formation of ambulance corps for the removal of sick and injured persons (excluding infectious cases), for long or short distances. In the former case, it is a most important point to secure, as far as possible, uniformity of design in the ambulance material, so that any stretcher may fit any ambulance carriage or wheeled litter. As an instance of this, I quote a passage from Mr. Furley's paper, read at the Health Exhibition Conference in June last:—

"A few weeks ago an invalid at Cannes was placed in a compact bed on an 'Ashford' litter, that had been purchased of the St. John Ambulance Association for use in that town, and taken to the railway station. Here he was lifted off, still on the same stretcher, and put into a saloon carriage, and thus brought without change to Boulogne. Patient and stretcher were then put on board a steamboat, and at Folkestone again placed on the railroad. Two members of the Metropolitan Ambulance Corps of the St. John Ambulance Association met

the train at Charing Cross with a horse-carriage, and in this manner the invalid was transported, literally in a bed, from the shores of the Mediterranean to his home in London."

A well-organised ambulance corps has been established in the metropolis with a waggon and all material necessary for the work. Removals of patients are effected at a regular scale of fees, reduced to a nominal amount in cases of persons with small means, and convenient arrangements are made with the railway companies and others to ensure the greatest amount of comfort to the patients during transport. The case which I have quoted of a journey from Cannes to London is an example of what can be done by a properly-organized system. Local ambulance corps have been formed at Leicester, Leamington, Bridgham, in Yorkshire, and at various places in Kent. There is every prospect of this useful branch of the movement extending throughout the length and breadth of the land.

The Association is still endeavouring to establish ambulance centres at all the principal termini and junctions of the different railway companies, in connection with classes to be held at regular intervals among the employés. At such centres it is proposed to keep a depôt of stores ready at hand, in case of accidents. These proposals are being seriously considered by the directors of several companies, and will no doubt lead to some systematic organization being established, either under their direct control or under the Association. In fact, classes have been already held in connection with five of the leading companies. As an example of how useful such classes may be, I quote a recent case of eight men who were suffocated by poisonous gas in the hold of the s.s. "Cardiganshire," lying in the docks of the N. E. Ry. Co., at Middlesborough. They were extricated with difficulty and lifted on deck, where they lay apparently dead. Doctors were sent for, but, being early in the morning, it was an hour before they arrived; in the meantime some of the employés restored animation by the means which they had learnt at the Ambulance classes. The lives of the eight men were thus saved.

With regard to home nursing, it is unnecessary for me to remind you how impossible it is to create a professional nurse by the instruction given in five lectures. No such thing is aimed at, but I wish to impress upon you that a great deal of useful information—information that every educated woman should possess—can be taught in those five lectures, especially if the pupil has already passed through the first aid course. I have been repeatedly informed by doctors of the prevailing ignorance of otherwise well-educated women as to some of the most ordinary duties of home-nursing and the commonest

precautions to be taken in the sick room. The doctor has no time to educate the nurse while he is attending to the patient, and remember that intelligent nursing is often as necessary to the recovery of the patient as skilful medical advice. Again, looking upon the matter from another point of view, how invaluable a privilege it is to be able to add to the comfort of a sufferer, perhaps near and dear to one, at a time when such help is most wanted, most appreciated.

It is said that the instinct of self-preservation is all powerful, but there seems to be another at least as strong—the instinct of preserving others. How often do we hear of men risking their own lives in trying to save those of others—perhaps perfect strangers. A week scarcely passes but we hear or read of men risking death by drowning, burning, or by suffocation in the pits, while endeavouring to help their fellow creatures from danger. We see the same strong instinct in our sisters. Have you ever witnessed the savage havoc of war or the pitiless scourge of an epidemic? There is no want of women ready to nurse the victims though heavy risks have often to be run. During the Turco-Russian War fifteen out of the forty sisters of charity engaged in nursing in the military hospitals at Constantinople succumbed through exhaustion and disease; a strange reward for such devotion! I might quote many other instances in which women have forgotten all idea of self-preservation in their eagerness to relieve the sufferings of others.

With such instincts strongly implanted in us, is it strange that the work of the St. John Ambulance Association should have taken root so deeply among the masses and brought forth fruit so abundantly? Whatever and whenever the sickness or accident may be, of stout hearts and willing hands we have plenty. What is wanted is a little more knowledge to enable those willing hands to do well the good work they may undertake. That knowledge it is the aim and ambition of the Association to impart.

Having given you a short and very imperfect account of the progress made by the St. John Ambulance Association in ambulance work for *non-infectious* cases, I propose to deal with a still more difficult, and, I may say, gigantic task, in connection with *infectious* cases recently undertaken by the ambulance department of the Metropolitan Asylums Board, and carried out to a highly successful issue. It may not be known to many of you that the Metropolitan Asylums Board has, among its other duties, that of the transport to hospitals, and treatment of large numbers of sufferers from small-pox and other epidemics, which commit such havoc among the crowded population of our Metropolis. It is with these transport and ambulance arrangements

that we have to do to-day, and, thanks to the large resources at its command, and the Parliamentary powers at its disposal, the Board has organized the largest system on record of ambulance road and river transport in connection with its floating hospitals and convalescent camps.

The object of the new system is to prevent the concentration of any considerable number of infectious cases in the London hospitals. As many as possible of these patients are moved by detachments from the hospitals, or singly from their own homes, to special ambulance wharves, and are thence taken down the river by the Board's ambulance steamers to the floating hospital or the convalescent camp.

For ambulance purposes London is divided into three districts, the East, West, and South-East, in which are respectively established three ambulance stations, in direct telephonic communication with the central office of the Board in Norfolk Street, Strand. Every ambulance station contains coach-house, stables, kitchen, dormitories, disinfecting rooms, and other offices adapted to the wants of the resident staff. The greatest precautions are observed to prevent infection during the frequent passage of the ambulance waggons through crowded streets. Every ambulance carriage is thoroughly disinfected at the hospital to which it has brought a patient *before leaving that hospital*, and proper precautions are taken in the case of any of the staff who may be brought into contact with patients.

The ambulance carriages, some forty in number, are distributed between the three ambulance stations. Some are reserved for fever cases, others for small-pox. These latter may be divided into two classes; a large size for four or five patients and nurse, used for transferring detachments of patients from the hospitals to the ambulance wharves on their way to the floating hospital; and a small size, used for conveying one or two cases from their homes to the hospitals or wharves. These waggons are specially constructed, the side windows do not open low down, and ventilation is effected as far as possible from above. Experiments are being carried out, with every prospect of success, to purify the vitiated air escaping from the interior of the waggon during its journey by means of a special disinfecting arrangement in connection with an exhaust cowl.

In order to show the amount of work which is done by these road ambulances during an epidemic, I will take as an example the week ending July 5 last, when the small-pox epidemic in London was decidedly on the decrease. The number of removals of small-pox patients was as follows:—

Acute cases, conveyed from their homes to hospitals and wharves in London	241
---------------------------------------------------------------------------	-----	-----	-----	-----	-----

Acute and convalescent cases from hospitals to wharves in London...	...	...	...	...	99
Convalescing cases from the Floating Hospital (<i>Long Reach Pier</i>) to the Convalescent Camp	...	...	...	...	162
Received and discharged patients reconveyed from the camp to Long Reach Pier	...	...	...	...	126
Recovered and discharged from the wharves to their homes in London	...	...	...	...	126
Recovered and discharged from London hospitals to their homes	...	...	...	...	17
Total during week	...	...	...	...	771

During the same week there were 61 fever cases removed, making a total of 832 removals in all by the ambulance waggons.

We now come to the ambulance steamers, two of which, the "Red Cross" and "Maltese Cross," are specially constructed for the conveyance of patients from London down the river to the camp and floating hospitals; a third, the "Albert Victor," though arranged to carry acute and other cases on an emergency, is intended to carry back to the wharves in London, *en route* to their homes, the recovered and disinfected patients from the Floating Hospital and Camp. The fourth steamer, the "Marguerite," which is much smaller, is used exclusively for the conveyance of hospital ships' committee of the board, and for the nurses and other members of the staff; also for the conveyance and reconveyance of any relations of the patients who may have been summoned to their bedsides.

The "Red Cross" and "Maltese Cross" were designed by the naval architect, Mr. Adam Miller. Special care has been taken to provide for proper ventilation, and no detail is wanting which might add to the comfort of the patients on their journey. Those who are too weak to walk, are lifted from the ambulance waggons on their stretchers, and carried direct on board, where they are under the same conditions as if in a hospital. A doctor and nurse are told off for each steamer, and accompany the patient during the journey.

The dimensions and speed of these ambulance steamers are as follows:—The "Red Cross" is 105 ft. in length, with a beam of 16 ft. 6 in.; depth 6 ft. 6 in., and she draws 4 ft. 6 in. She can carry 16 patients, lying down, and 150 sitting. Speed about 10 knots. The "Maltese Cross," only recently finished, is 132 ft. long and 16 ft. 6 in. broad, with a depth of 7 ft. 6 in., but only draws 3 ft. of water. She can carry 36 patients, lying down, and 200 sitting, with a speed of 10 knots. Her

lighter draught will enable her to go up the river to Wandsworth to take away patients at all states of the tide from the new ambulance wharf to be constructed there.

The "Albert Victor" is of nearly the same dimensions as the "Maltese Cross," and can carry 20 patients, lying down, and 150 sitting, with a speed of 12 knots; but she could carry a much larger number of recovered patients, for whose accommodation she is mainly intended. The "Marguerite" is a fast little paddle-wheel steamer, 73 ft. long, and 10 ft. 1 in. broad, drawing 2 ft. 4 in., and can carry 30 persons, with a speed of 12 knots.

Taking the same week which I selected before, namely, that ending July 5th, as a fair example of the work done during an ordinary epidemic, I find that the ambulance steamers conveyed from London 129 acute recumbent cases, and 112 not acute and convalescent cases, making a total of 241, while 126 recovered patients were re-conveyed from the hospital ships and Camp Pier back to London; thus the total removals in the week amounted to 367. In many weeks this total was far exceeded.

As the ordinary London wharves could not be used for embarking patients on to the ambulance steamers, the Metropolitan Asylums Board had to select and purchase wharves with landing stages of their own. The sites of the three London wharves which were found necessary were selected as being in the most accessible position with respect to the hospitals and the population of the various districts in London.

During an epidemic the ambulance waggons would, as it were, converge on the wharves, and, therefore, an important consideration in choosing the sites was that these wharves should be approached by roads, where there was not likely to be any block in the traffic causing delay to the ambulance waggons, and keeping them standing long in crowded thoroughfares. Finally three sites were selected. One on the Middlesex shore at Wandsworth, destined to receive patients from the North-Western Hospital at Hampstead, distance seven miles, and the Western Hospital at Fulham, distance one and a quarter miles. The second wharf is Acorn Wharf, Rotherhithe, on the Surrey shore, which accommodates the South-Western Hospital at Stockwell and the South-Eastern Hospital at Deptford, situated at distances of four miles and three-quarters and two miles respectively. The third wharf is Brown's Wharf, Blackwall, on the Middlesex shore, selected for the accommodation of the South-Eastern Hospital and Plaistow Hospital, each about four miles off. A fourth wharf, with pier, has been constructed opposite the Floating Hospital in Long Reach, some twenty miles down the Thames below London Bridge, called Long

Reach Wharf. It is that where patients destined for the Convalescent Camp Hospital, four miles off, are disembarked.

The ambulance wharves will all be furnished with piers running out to a floating landing-stage, so that the patients can be embarked and disembarked at all states of the tide. These piers will be covered in, so that the patients may not run any risks while being conveyed along them during rough weather. The Wandsworth wharf has not yet been commenced, but of the others, the Long Reach wharf and pier have been in use for some time, and also Acorn Wharf, while Brown's Wharf is still in course of construction.

This paper would, perhaps, be incomplete without some description of the Floating Hospital and the Camp Convalescent Hospital, so often referred to above.

The Floating Hospital consists of three ships, the "Atlas," "Endymion," and "Castalia," moored one behind the other in the order named. The "Atlas" is a large three decker man-of-war, lent to the Board by the Admiralty, and is 284 ft. long and 50 ft. broad. A large hatchway, 24 ft. by 11 ft. 6 in. has been cut through the upper and lower decks in the centre of the ship, and forms a most efficient ventilating shaft for the egress of the impure air from the wards, while the fresh air is introduced through a long series of windows replacing the ports. Owing to the lowness of the wards this arrangement was found necessary. The patients are distributed in three long wards, accommodating in all 150, but, on an emergency, 200 patients could be treated on board. The "Castalia" is a twin ship, which, having been unsuccessful as a Channel passenger boat, has been bought by the Metropolitan Asylums Board. She is an object of special interest to those who are watching the progress of sanitary science, on account of the peculiar *échelon* arrangement of the five detached huts or wards on the capacious upper deck—an arrangement for which I was responsible. Of these huts the two end ones are, in outside measurement, 50 ft. by 28 ft., and the remaining three 54 ft. by 20 ft. The lower deck is divided by the iron bulkheads of the ship into five wards, of which the two end ones are semi-circular, with a radius of about 30 ft., and the remaining three rectangular, and measuring about 60 ft. by 30 ft.

There are several advantages in this *échelon* arrangement of detached wards. It can be seen at a glance that the end windows in the long sides of the ward, instead of looking directly into the windows of the adjoining ward, which they would do if the huts were built at right angles to the length of the ship, look out crossways or diagonally on the open river, and thus a maximum amount of cross ventilation is secured. Again, the

fact of these windows looking edgeways up and down the river, gives a far more cheerful outlook to the patients than if they looked direct into the walls or windows of the adjoining huts.

The ventilation of these detached huts was a very simple matter, but that of the wards in the lower deck caused much trouble and expense, as the only windows in those wards were in the short sides; and it is highly undesirable, especially in the case of infectious disease, that the current of air should flow from one end of a long ward to another. Artificial means had therefore to be adopted; two large apertures were made in the roof of every ward, and funnels carried up, surmounted by large Boyle's exhaust cowls. These effectually draw up the vitiated air, while the fresh air is introduced by means of apertures near the floor, fitted with a series of hot-water pipes, which have the effect of taking the chill off the air before it enters the ward. In case of a dead calm, or very slight motion of the outside air, when the exhaust cowls might not act, a blast arrangement has been fitted to the ventilating shafts to create an artificial current of air. "The *Castalia*" could accommodate, on an emergency, 200 patients.

The "*Endymion*" is a frigate lent by the Admiralty, 277 ft. long, by 42 ft. broad, and is moored between, and connected by gangways fore and aft with, the two hospital ships. She is used as an administration ship on which the nurses and other employés, about 130 in all, live when off duty; and here the office, cooking, and other administration work is carried on. The warming of all three ships is effected by hot water pipes, and estimates are now being prepared for lighting by incandescent electric lamps. The washing for this large establishment is done in two steam laundries, one for the patients and the other for the staff, erected on the south shore of the river opposite the ships. The Thames water not being considered sufficiently pure for this purpose, water is brought in pipes from the Kent Water-works, a distance of four miles.

The Camp Convalescent Hospitals, to which are also sent some of the mild cases, are situated on the slopes of the Darent Hills about four miles south of the ships, and at a distance of 160 yards from each other. The sleeping tents in these camps are pitched 50 feet from each other in double rows, with an interval of 80 feet between the rows. They are not pitched quite regularly, being sometimes arranged in *échelon*, or in other positions so as to take advantage of the undulations of the ground. The only wooden structures are the kitchens, boiler house, bath house, and the scullery.

The sizes of the tents are as follows:—Ordinary sleeping tents, for twenty beds, 50 ft. by 25 ft.; day tents, 60 ft. by

25 ft.; infirmary tents, for sixteen beds, 80 ft. by 25 ft. The lighting and cooking is done by gas furnished by the neighbouring gas works in connection with the Darent Asylum; the tents are warmed when necessary by a system of hot-water pipes, by which means the temperature can be kept nearly uniform. At one time during the recent epidemic, there were over 1,000 patients in the camps.

Now that the small-pox epidemic is over, these camps will be closed, and the tents, after being thoroughly disinfected, can be stored away ready for use on some future occasion. In this matter a camp hospital has a great advantage over a permanent structure, while the result of the treatment of patients under canvas is reported to be highly satisfactory.

The new system which I have described to you is a decided advance on what has gone before; some of us remember how people suffering from small-pox have been carried through the streets in ordinary cabs, not unfrequently accompanied by members of their family. We have heard how a parish hospital waggon for infectious cases was kept in the same shed with the bread waggon for out-door relief and the guardians' carriage; how, in another case, it was kept alongside an ordinary invalid chair; while it is not so many years ago since a cab drove up to a London small-pox hospital with the driver and patient both intoxicated.

The work of the new ambulance system of the Metropolitan Asylums Board during the late epidemic may be briefly summarised as follows:—Between 200 and 300 patients a week were removed from the metropolitan area by road and river ambulances, with the result that a very large proportion of the small-pox patients, instead of filling the London hospitals, were treated in the country, twenty miles from the metropolis; at the same time the conditions of the Darent camp were highly favourable to the convalescents treated there. Many authorities consider that the speedy removal of so many infected persons from our crowded metropolis had a great deal to do with the rapid and somewhat unexpected termination of the recent small-pox epidemic.

I beg to thank the President and Committee of this Sanitary Congress for the high honour which they have done me in inviting me to address you to-day on this great subject of Ambulance Work, to which, as a member of the St. John Ambulance Association and of the Metropolitan Asylums Board, I have devoted no little time and attention. It is truly a subject of national importance, for it affects the health, and therefore the wealth and happiness of thousands of the inhabitants of this great country. With regard to the St. John ambulance work, I trust that the other towns and districts of Ireland will follow the good lead which Dublin has given them;

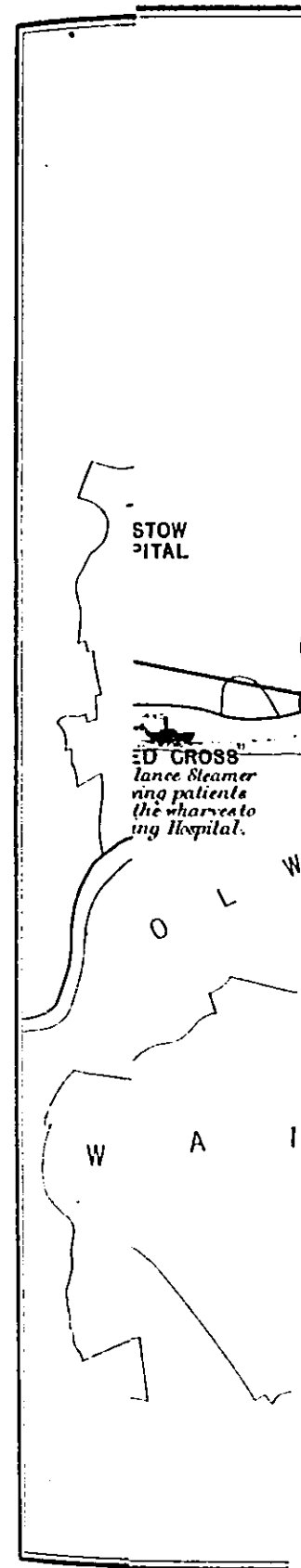
while with regard to the Metropolitan Asylums Board ambulance organisation during epidemics, I hope that the results of its recent experience placed before you to-day may be of some practical use in the event of any outbreak of an epidemic in this country. Pray God you may long be spared from such a calamity.

Let me add that the extension of ambulance work in Ireland, a country to which I am attached by so many ties of blood and friendship, is of special interest to me; I feel moreover that this work is one well suited to the warm hearts and sympathies of Irishmen.

In conclusion I cannot do better than quote the words of that distinguished surgeon Sir James Paget, spoken at a recent conference at the Health Exhibition. Referring to ambulance work in general, he said, "Few things indeed were there in which charity could better exercise itself than in this. There was ambulance work, or first aid, in that incident which led to the giving of the command most general and most unconditional, where a man on finding another wounded by the roadside poured in oil and wine, and set him on his own beast and took him to the inn. That was an admirable example of what ambulance work might be, and the command was 'Go thou and do likewise.'"

Dr. J. F. J. SYKES (London), Senior Secretary of the Section, said the method adopted in London for procuring an ambulance was to telephone or telegraph to the head office in Norfolk Street, Strand, and the head office telegraphed to the sub-office nearest the place where the ambulance was required; so that in the course of an hour the patient was taken by the ambulance to the wharf, put on board the steamer and taken down the river. The *river-carriage* of the patients was the great point of innovation, as it minimised the spread of infection, and facilitated transport to a greater distance. Whether the Hospital happened to be in mid river or on the bank mattered very little, provided it was isolated. He had never seen it acknowledged that Dr. James Stevenson, Medical Officer of Health for St. Pancras, was the first to investigate and unmask the horrible system of infectious diseases removal, and that he published a pamphlet which pointed out the necessity for an improved ambulance system. The arrangements proposed for the reception of cholera patients last summer in London, although unmentioned, were worthy of description.

Dr. T. W. GRIMSHAW (President of the Section), was afraid they could not expect much to be done in Dublin. The difficulty was insurmountable in the way of transit of the sick by the river, as the river could only be used two hours each day for steamer traffic under the bridges. Dublin was much in need of a proper ambulance system; he was sorry to say a great number of street cabs were still used for carrying infectious cases.



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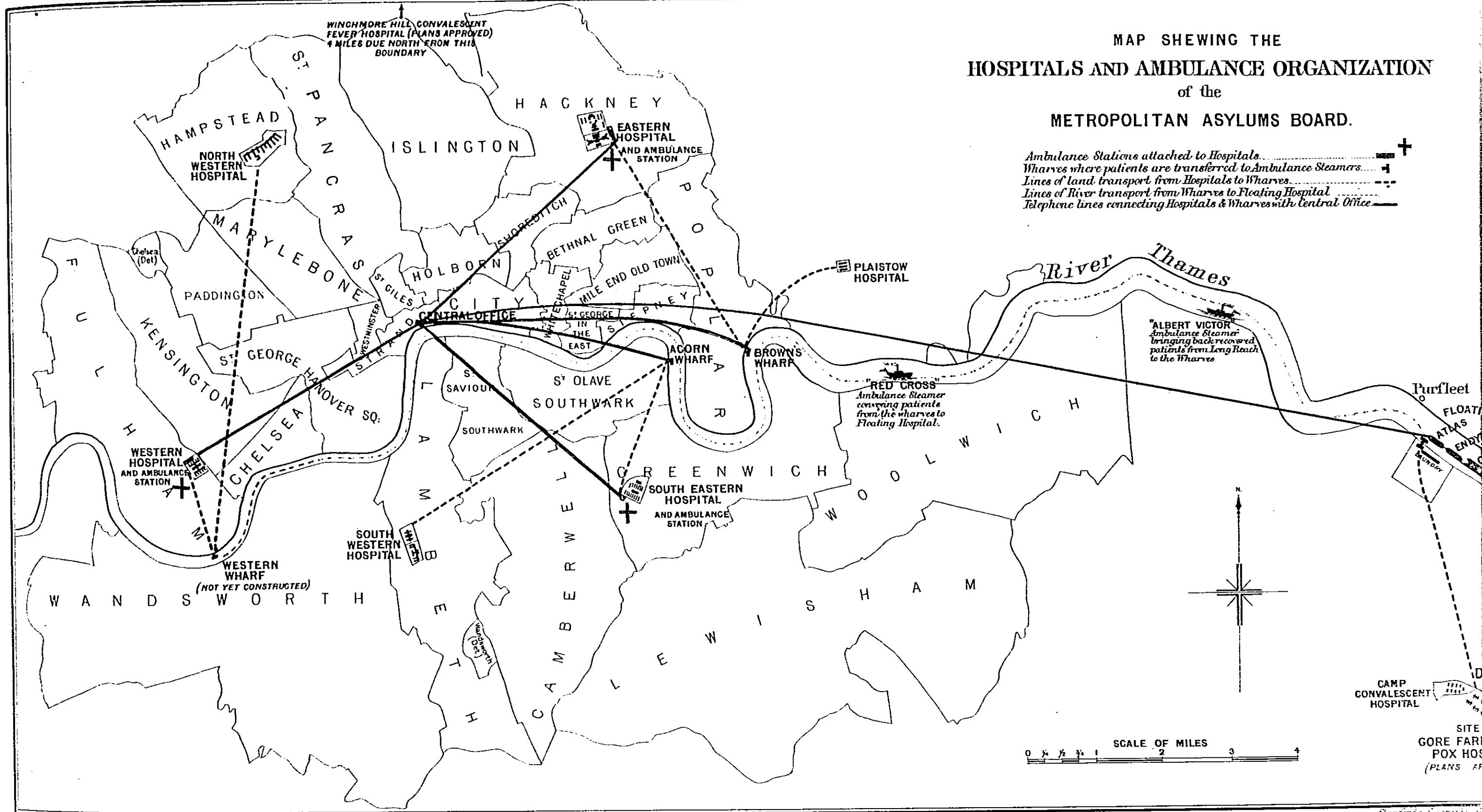
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MAP SHEWING THE HOSPITALS AND AMBULANCE ORGANIZATION of the METROPOLITAN ASYLUMS BOARD.

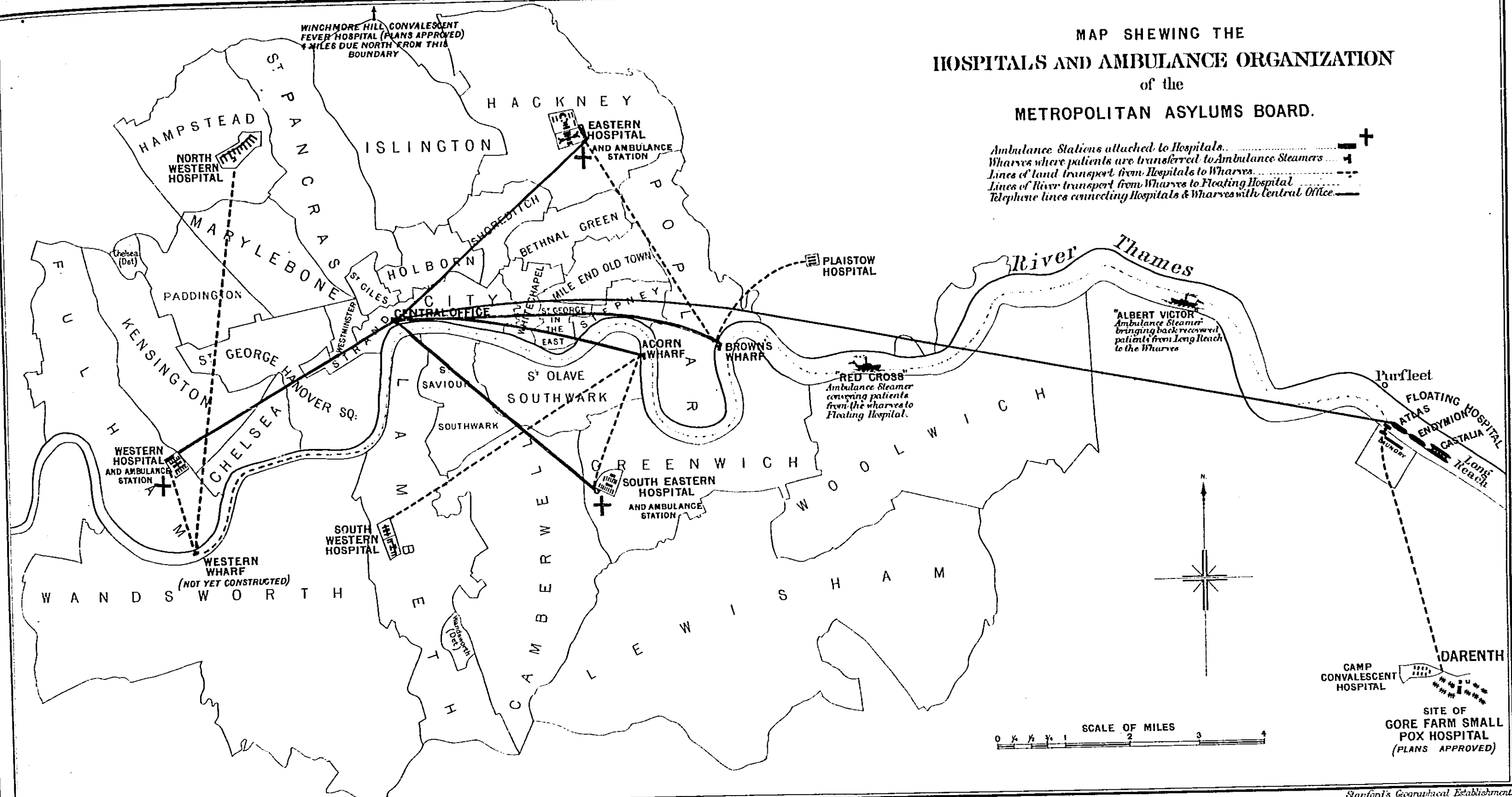


Extracted from the Health Exhibition pamphlet of the Metropolitan Asylums Board

Standard's Engraving

MAP SHEWING THE
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Ambulance Stations attached to Hospitals. —+
Wharves where patients are transferred to Ambulance Steamers. —+
Lines of land transport from Hospitals to Wharves. - - -
Lines of River transport from Wharves to Floating Hospital. - - -
Telephone lines connecting Hospitals & Wharves with Central Office. —



Stanford's Geographical Establishment

Extracted from the Health Exhibition pamphlet of the Metropolitan Asylums Board.