



YEAR 1929.
TWENTY-SEVENTH ANNUAL REPORT
ON THE
Health and Sanitary Condition
OF THE
City of Limerick.

MICHAEL S. McGRATH,

F.R.C.S., D.P.H.,

MEDICAL SUPERINTENDENT OFFICER OF HEALTH.

PRINTED BY THE LIMERICK CITY COUNCIL

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CITY PRINTING CO., LIMERICK. 864 R.

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TWENTY-SEVENTH ANNUAL REPORT

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HEALTH AND SANITARY CONDITION

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CITY OF LIMERICK.

YEAR 1929.

18 THE CRESCENT,

LIMERICK, JUNE 18th, 1930.

MR. MAYOR AND MEMBERS OF THE CORPORATION,

I beg to submit my Annual Report for the year 1929 on the health of the population and on the sanitary condition of the City, and in doing so, I desire to say that there was only one outbreak of an epidemic disease during the twelve months under review. In that period there were five cases of Enteric Fever, one of which proved fatal; 99 cases of scarlet fever, six of which proved fatal, and 28 cases of Diphtheria, with five deaths. As waves of epidemic disease are liable to return at intervals it may be well to refer to the question of prevention as regards Diphtheria. In many countries this disease is constantly in evidence, and the Health Authorities have adopted a system of inoculation with a serum, which has the effect of rendering immune all children in whose case it has been used. There is no compulsion, but the parents of thousands of school children have agreed to the process, and if any such epidemics should again manifest themselves amongst us, it would be well that the merits of this system should be widely known. It has been found by us, from experience, that when children who were in contact with cases of Diphtheria were inoculated they were made immune for the time being, not one of them having contracted the disease. An advantage of this system would be that in a household where the disease broke out there would be no necessity of removing the inoculated children, thus avoiding the danger of overcrowding the hospital, which must always be undesirable during epidemics.

In connection with epidemics it may be well to note that of late years the virulence of scarlet fever has decreased considerably, whereas measles, at one time thought lightly of, is now regarded as much the more serious of the two diseases. The reason for this is, that the complications following measles, chiefly in the form of broncho pneumonia, render it extremely serious, not alone from its high mortality, but as a precursor to tuberculosis, attacks of which patients are in after years extremely liable. At present in the leading London Hospitals much more attention is being paid to measles than to scarlet fever.

There were three deaths from Measles in Limerick last year, all of them being due to complications such as Broncho Pneumonia, and this fact emphasises the necessity for the utmost care in dealing with this disease, which proves so fatal for children.

SUMMARY OF VITAL STATISTICS.

	1929	1928	1927	1926	1925	1924	1923	1922
Population	39,448	39,448	39,448	39,448	38,518	38,518	38,518	38,518
Area—Acres	2,386	2,386	2,386	2,386	2,386	2,386	2,386	2,386
Density	16.6	16.6	16.6	16.6	16.1	16.1	16.1	16.1
Births	1,113	1,071	1,032	1,036	1,060	1,092	1,052	1,008
Birth Rate	28.2	27.1	26.0	26.1	27.5	27.9	27.3	26.2
Deaths	654	634	616	742	577	577	663	745
Death Rate	16.6	16.1	15.5	18.7	15.0	14.7	17.2	19.3
Death Rate from principal Epidemic Diseases	1.0	1.4	0.6	3.1	—	0.5	2.7	1.2
Infantile Deaths under one year of age	132	129	108	151	97	98	135	109
Infantile Mortality Rate	3.3	3.2	2.8	3.8	2.5	2.5	3.2	2.8
Tuberculosis Rate	1.7	1.6	1.8	1.6	1.8	1.5	1.9	1.84
Excess of Births over Deaths	459	434	416	294	483	515	389	263
Deaths from all forms of Tuberculosis	69	65	61	66	70	59	74	71
Deaths from Cancer	45	31	30	31	—	—	—	—
Deaths from Phthisis	62	57	54	—	—	—	—	—
Deaths from other forms	7	8	7	—	—	—	—	—
Phthisis Rate	1.7	1.7	1.7	—	—	—	—	—

SUMMARY OF BIRTHS AND DEATHS IN URBAN DISTRICTS.

Shewing the Annual Birth and Death Rates per 1,000 of the population of the principal Urban Sanitary Districts of Ireland (per Registrar-General's Return).

Urban District.	Births.	Deaths from	
		All Causes.	Zymotic Diseases.
Belfast	21.4	15.6	1.0
Londonderry	25.3	14.1	0.9
Dublin (City)	27.4	16.6	1.0
Dublin Registration Area	25.1	16.2	0.9
Cork	20.9	16.7	1.4
Limerick	28.2	16.6	1.0
Waterford	23.2	17.0	2.3
Galway	22.8	14.8	0.4
Dundalk	17.3	12.5	0.9
Drogheda	26.0	17.0	0.8
Wexford	24.3	15.4	0.5
Sligo	21.2	11.0	0.4
Kilkenny	23.5	15.4	1.0
Tralee	18.3	12.3	0.6
Clonmel	21.3	12.5	—

NOTIFICATIONS OF INFECTIOUS DISEASES.

RETURNS of the number of cases of Infectious Diseases notified under the "Infectious Diseases (Notification) Act, 1889," and the "Tuberculosis Prevention (Ireland) Act, 1908," as furnished by the respective sanitary authorities, are set forth in the following table:—

TABLE 6.—Showing the NUMBER OF CASES OF INFECTIOUS DISEASES notified in the Dublin Registration Area (viz.:—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Dún Laoghaire), and in the Cities of Cork, Limerick, and Waterford, during the year 1929 (52 weeks). A dash (—) denotes that the disease in question is not notifiable in the district

CITIES AND URBAN DISTRICTS.	Population, 1926.	Enteric Fever.	Typhus.	Pyrexia.	Measles.	Scarlet Fever.	Whooping Cough.	Diphtheria (including Membranous Group).	Erysipelas.	Purpural Fever.	Diarrhoeal Diseases.	Dysentery.	Malaria.	Ophthalmia Neonatorum.	Acute Primary Pneumonia and Acute Bacterial Pneumonia.	Cerebro spinal Fever.	Acute Poliomyelitis.	Encephalitis.	Varicella.	Tuberculosis.	Total.
City of Dublin.	316,693	15(4)	1	7	—	430	—	500	55	11	—	—	1	6	256	3	—	—	—	818	2,103
Rathmines and Rathgar Urban District	39,984	3	—	—	—	49	—	60	5	—	—	—	—	—	3	—	—	3	—	123	—
Pembroke Urban Dist.	33,383	3	—	—	3	25	23	61	2	—	—	—	—	—	—	1	—	—	—	118	—
Blackrock Urban Dist.	9,934	2	—	—	—	7	—	9	1	—	—	—	—	—	—	—	—	—	—	19	—
Dun Laoghaire U. D.	18,987	1	—	—	—	2	—	18	—	—	—	—	—	—	—	—	—	—	—	21	—
City of Cork.	78,490	6	1	—	215	215	1	368	23	6	78	—	—	—	7	—	—	2	79	207	120(4)
City of Limerick.	39,448	5	—	1	—	99	—	28	—	—	—	—	—	—	1	—	—	—	—	134	—
City of Waterford.	26,147	1	—	—	—	29	—	6	—	—	—	—	—	—	—	—	—	—	—	39	—

DEATHS.

The deaths which occurred in the city numbered 654, as compared with 634 for 1928, 616 for 1927, 742 for 1926, 577 for 1925, the same number for 1924, 663 for 1923, 745 for 1922. The death rate per 1,000 was 16.6, as compared with 16.1 for 1928, 15.5 for 1927, 18.7 for 1926, 15.0 for 1925, 14.7 for 1924, 17.2 for 1923, and 19.3 for 1922. The number of deaths of children under one year of age was 132, and the number of deaths of persons 65 years and upwards was 133.

BIRTH RATE.

The birth rate for the year was 28.2, as compared with 27.1 for 1928, 26 for 1927, 26.1 for 1926, 27.5 for 1925, 27.9 for 1924, and 26.2 per 1,000 for 1922. The birth rate in Limerick for 1929 was higher than that for 1928, and continues to compare favourably with the rate for most other Irish centres.

TYPHUS FEVER.

The City was once more free from Typhus Fever last year.

TYPHOID FEVER.

Five cases of Typhoid were notified during the year, with one fatal termination.

SCARLATINA.

Ninety-nine cases of Scarlatina were notified, six of which proved fatal. The figures for Scarlatina were rendered higher this year by other cases spreading in boarding schools before this particular disease was detected. An efficient antitoxin has at last been found for this disease, which not only reduces the duration of it, but inhibits the occurrence of complications. This treatment has already proved satisfactory.

CONSUMPTION.

The number of deaths from Tuberculous Diseases was 69, as compared with 65 for 1928, 61 for 1927, 66 for 1926, 70 in 1925, 59 in 1924, and 74 for 1923. The figures showed a decline in the mortality from this disease up to 1924, as the total for 1918 was 124; for 1919, 113; for 1920, 95; and for 1921, 80, but here, as elsewhere, there has been an upward curve in the mortality for some time past.

A more hopeful note prevails in the pronouncements of distinguished medical men as regards the problem of successfully tackling Tuberculosis. This problem is no longer regarded as insoluble, as it was some 50 years ago. It is now recognised as an essential fact that the vital point in the stamping out of the disease is the question of prevention. Such matters as housing, feeding, fresh air, sunlight, and exercise must be taken into consideration. In addition, a course of treatment by inoculation as a preventative is now in use, and gives fair promise of success, experiments on these lines having shown that infants predisposed to Tuberculosis responded to this line of treatment satisfactorily. It is a matter of common experience that diseases which lower the vitality and impair the texture of organs, especially the lungs, favour the attack of tubercle. Measles, whooping cough, influenza, pleurisy, bronchitis, and affections arising from inhalation of irritative gases and spicular dust may be especially enumerated. Many of these diseases are the outcome of overcrowding and insanitary surroundings, and this inevitably brings up the question of proper housing accommodation, which lies at the root of the problem presented by Tuberculosis. It is undeniable that sputum can contaminate dust of dwellings, streets, lanes, vehicles, and public places, inhaled and ingested from air and with food is the most frequent cause of consumption. It is, in fact, a fifth disease. The condition of Limerick from this point of view is only too well known to you, and until there is a great improvement in the sanitary surroundings of the mass of the inhabitants all fifth diseases will be in evidence in our midst.

Dust is a deadly source of consumption, and other diseases. Very few seem to realise the harm done by this dust in carrying disease germs, with which it is impregnated, into the lungs and other organs of those who inhale or ingest it. In up-to-date cities the dust is never collected and carried away in a dry state, but is well watered before being removed, thus securing the removal in the most cleanly and harmless manner.

The same should apply to workshops, and even to private houses. All floors should be plentifully moistened before being swept, as nothing can be more dangerous than impregnating the atmosphere, which people are compelled to breathe, with germ-laden dust.

As regards local efforts in the notification and stamping out of this disease, Dr. Moran, since his appointment as Tuberculosis and Schools Medical Officer, has displayed much energy and initiative in preliminary arrangements for dealing with the White Plague; and I have no doubt when this new scheme is in full working order, satisfactory results will be secured.

Excellent work is being done in the surgical treatment of tuberculosis in children up to twelve years of age at Cappagh, Finglas, Co. Dublin, and some cases already sent from the city have shown considerable improvement. The cost per head is 28s. a week, and until the special treatment given at Cappagh can be more generally availed of throughout the country, children of the stated age suffering from surgical tuberculosis should certainly be sent to Cappagh.

It may be added that surgical cases have been for many years treated in the local Hospitals, but the absence of facilities for open air treatment for these cases is the chief drawback at present.

Sufficient attention does not seem to be paid to the isolation of advanced cases of tuberculosis and it would be a good thing if, when a medical board consisting of, say, three doctors, pronounced a case hopeless, isolation should be made compulsory. In this way the further spread of infection in families would be put a stop to, and the spread of the disease considerably checked. The removal of the slums lies at the root of this problem, and until proper housing accommodation can be provided, no complete or lasting solution can reasonably be hoped for. This subject is fully dealt with under the head of Housing in this report.

Attention is again directed to the number of deaths caused by consumption in the City of Limerick since 1900. They are as follows:—

Year.	Number of Deaths.	
	From Phthisis	Other Forms
1900	119	—
1901	131	—
1902	144	—
1903	220	—
1904	169	—
1905	162	—
1906	124	27
1907	163	37
1908	88	90
1909	79	35
1910	87	22
1911	75	14
1912	80	11
1913	85	17
1914	81	24
1915	90	20
1916	85	14
1917	94	18
1918	93	31
1919	94	19
1920	79	16
1921	72	18
1922	71	—
1923	74	—
1924	59	—
1925	70	—
1926	66	—
1927	54	7
1928	57	8
1929	52	7
Totals	2727	435

MATERNITY AND CHILD WELFARE.

Since January, 1921, there has been in operation in connection with the Bedford Row Lying-in Hospital a Maternity and Child Welfare Centre. It is worked under a committee, of which Miss Doyle is the Hon. Secretary. The committee consists of four members of the Limerick Corporation, and also representatives from the following societies:—Ladies' and Gentlemen's Societies of St. Vincent de Paul, St. Vincent de Paul Nursing Association, and the Limerick Nursing Association.

The Corporation has given its sanction to that scheme, and half the sum expended in working it is received from the National Grant. Mothers, with their children, up to five years of age, attend every Wednesday at the Hospital and receive advice and treatment. Vitrol and Glaxo are provided for suitable cases. There are, in addition, two trained nurses employed by the committee to visit the homes of the children who need their services.

Since the scheme came into operation useful work has been accomplished, but there is a wide field for the activities of the Centre, as the number of deaths in 1929 was 132. The toll of infant life is much too heavy, and must, to a great extent, be accounted for by the great difficulty of giving proper nursing to the sick infants in the wretched hovels in which most of them are at present compelled to live.

In connection with last year's total of deaths, it may be well to point out that forty of them were due to premature birth, the children living only a few minutes after being born. It is quite obvious that the frightfully insupportable surroundings in which expectant mothers live in our lanes must have a serious effect on the unborn offspring, which shows that the housing problem in Limerick is closely bound up with infant mortality. Forty three deaths of infants were due to convulsions, and this shows want of proper care in preparing food for very young children. Here it is that the instruction given at Bedford Row Hospital under the Child Welfare Scheme must prove most valuable in saving the lives of the little ones.

A word may here be said in praise of the excellent work done for fourteen years by the late Mrs. O'Brien, South Hill, who provided pure milk at cheap rates for the poor of the city, giving a quart of milk each day to deserving mothers. This work is still being carried on by the committee, 60 gallons of milk being provided daily at threepence a quart. There can scarcely be any doubt that few of the children who benefit by this arrangement would get any milk were it not so thoughtfully provided for them.

A recent development in our medical treatment of children has been the provision of Ultra Violet Rays and Artificial Sunlight for the various forms of Tuberculosis, Rickets and other infantile diseases due to malnutrition.

MUNICIPAL DINNERS.

The provision daily of Municipal Dinners for the poor, at two pence each, has been an important factor for the past three years in dealing with those who are badly in need of a good meal, which, in the case of a young mother, reacts favourably on the proper nutrition of her child. The Corporation finds part of the necessary finances and the remainder is made up by voluntary subscriptions of money or food given by generous citizens. Flag days and other appeals to the public are also made by the Municipal Dinners Committee, composed of Ladies who devote a great deal of their time to this most charitable and useful work.

MIDWIVES.

Under the jurisdiction of the Corporation there are 40 midwives certified to practise, and no complaints have been made with regard to any of them, nor have any cases of Puerperal Fever been recorded during the year.

CLEAN MILK.

Two facts are now universally recognised as having a direct and most important bearing upon public health. The first is that milk is the only food for babies, and one of the best foods for grown up people; and the second is that milk is the most dangerous of all foods, because it is the most easily contaminated. From this it is clear that the most stringent measures are necessary if the milk supply of a city like Limerick is to be clean and wholesome. Prosecutions have been instituted for adulterating it with water or depriving it of its fats, and the law has been invoked to insure the cleanliness of the milk supply. In great London dairies pasteurization of milk at 145° F. for 30 minutes has been found on scientific investigation to completely destroy all dangerous bacteria, while at the same time it does not deprive the milk of its nutritive qualities. Another matter that requires careful attention in the distribution of milk is the cleanliness of all milk vessels. Hitherto the usual method adopted for this purpose has been to scald those vessels, but that has been found ineffective. A specially constructed outfit for cleansing the vessel by means of a steam generator is now on the market, and can be had locally. The advantage of this system is that when the temperature is brought up to 140° F. for twenty-five minutes efficient sterilization is secured. In this connection I would strongly recommend that the example of Dublin should be followed as regards the use of properly sterilized bottles, quarts and pints, for the distribution of milk. A beginning has been made in one or two dairies supplying the city, but I will not be satisfied until I can record the general use of an efficient method of sterilization of the milk supply and its distribution in properly cleaned bottles in the city.

On this subject, I desire to draw attention to the report of the Inter-Departmental Committee to advise as to the cleanliness and wholesomeness of the milk supply, and it is to be hoped that legislation will be introduced in the near future to carry out the recommendations of the Committee. These include the Veterinary inspection of all cows at least twice a year, the revision of the Dairies, Cowsheds and Milkshops Order, 1928, with regard to the inspection of cattle, the construction of cowsheds, the sterilization of utensils, and the observance of personal cleanliness. Also that there should be a penalty for selling dirty milk, and that the cancellation of vendors' licences should follow three convictions.

CANCER.

45 deaths from Cancer occurred in the city in 1929, 31 in 1928, 30 in 1927, 31 in 1926, 32 in 1925, as against 51 in 1924, 36 in 1923, and 27 in 1922. Now that improved methods of treatment of the disease are available, it is well that it should be known and acted upon that the only hope of overcoming this scourge lies in the early detection and treatment, followed by thorough disinfection of the house and clothing of the affected person. In the case of an abnormal growth or ulceration or bleeding, medical advice should instantly be sought, as this disease, when taken in time, is quite amenable to treatment and ultimate cure. In addition to surgical treatment, Radium and X-Rays have been used with good results.

DENSITY.

By this term is meant the number of persons living on each acre. In Limerick the density is 16.6 persons, and this is very small, taking the City as a whole.

Limerick County Borough, comprising an area of 2,386 acres, was divided into eight wards, for which have been substituted five electoral divisions, for the purpose of Municipal representation in the Council, and into three Dispensary Districts for the Registration of Births and Deaths, etc.

The following particulars have been kindly supplied by the Director of Statistics, Department of Industry and Commerce, Dublin :—

DIVISIONS OF POPULATION.

Under the Local Government (Ireland) Act, 1919, the population of the City has been divided as follows :—

Area	Wards Comprised in Electoral Division	Population	Total
No. 1 Electoral Division	Abbey Ward Castle Ward	5,331 5,186	10,511
No. 2 Electoral Division	Custom House Ward Market Ward	3,190 3,061	6,251
No. 3 Electoral Division	Irishtown Ward	5,974	5,974
No. 4 Electoral Division	Dock Ward	8,900	8,900
No. 5 Electoral Division	Glentworth Ward Shannon Ward	4,588 3,224	7,812

TABLE II. HOUSES AND POPULATION BY REGISTRARS' DISTRICTS.

Dispensary.	Houses.			Population.	
	Total	In-habited	Uninhabited	Persons	Males Females
Limerick No. I.	2165	2138	27	12695	6064 6631
Limerick No. II.	1420	1376	44	10580	5131 5449
Limerick No. III.	2592	2566	26	16173	7850 8323

TENEMENTS.

There is much overcrowding in the houses, and the census of 1926 showed that 4,469 persons then lived in 1,463 single rooms, 782 of which were occupied by more than two persons on the average each. The following tables will be of interest as regards congestion:

Occupiers (or Heads of Families) Occupying Small Houses.

Year	Part of a Room	One Room	Two Rooms	Three Rooms	Four Rooms	Total of Total of
1926	21	1,453	2,193	1,116	1,115	3,056
						4,722
						6,087

Number of Persons in each Tenement	No. of such Tenements	Total No. of Persons
------------------------------------	-----------------------	----------------------

1	337	337
2	344	688
3	274	822
4	207	828
5	147	735
6	78	468
7	41	287
8	19	152
9	10	90
10	4	40
11	2	22
Totals	1,463	4,469

No. of 1 Room Tenements Occupied by more than two persons.	No. of Persons per Room
--	-------------------------

Year	No. of Rooms	No. of Occupiers	No. of Persons per Room
1926	782	3,444	4.40

CENSUS, 1926. LIMERICK COUNTY BOROUGH.

Persons in Private Families ... 34570
Persons in Boarding Houses, Hotels, &c., and Institutions ... 4878

Total ... 39448

Table VI. Number of Persons in Private Families, living under the undermentioned Housing Conditions on 18th April, 1926.

Rooms Occupied	SIZE OF FAMILY											Total
	1	2	3	4	5	6	7	8	9	10	11 and over	
1	337	688	822	828	735	468	152	90	40	22	—	4469
2	214	782	1113	1408	1465	1272	736	621	250	77	102	9153
3	51	338	531	628	775	774	568	441	344	132	126	5418
4	36	346	600	716	970	954	720	621	370	231	210	6754
5	20	192	225	512	515	532	432	225	250	99	136	3627
6	12	94	168	272	255	304	248	189	80	55	49	1953
7	6	56	96	164	165	150	126	70	66	38	—	1185
8	5	38	84	140	155	120	80	45	20	66	29	865
9	3	16	45	52	75	72	24	18	20	22	47	429
10	1	14	25	36	25	24	40	36	10	—	—	316
11 and over	—	—	4	36	54	65	30	49	9	43	28	401
Total	685	2566	3741	4870	5250	4722	3128	2421	1490	903	765	34570

Table VII. Statement showing the number of Inhabited Buildings giving particulars of the number of families in each house, and also the number of uninhabited private dwellings in the Limerick County Borough :—

	Uninhabited Private dw'ings	Inhabited Private dw'ings	Inhabited Houses having the following number of Families in each house									
			Total									
			1	2	3	4	5	6	7	8	9	10
Limerick No. 1 D. ...	27	2088	1029	114	33	25	13	7	10	5	1	...
Limerick No. 2 D. ...	44	1113	1376	404	44	25	26	21	3	1	...	1
Limerick No. 3 D. ...	26	2221	2136	276	86	37	18	7	2	...	3	1
TOTAL ...	97	5532	6080	5109	531	188	106	56	40	33	8	5

HOUSING OF THE WORKING CLASSES.

From the point of view of Public Health, on which it is my duty to lay stress, the great drawback in the social life of Limerick is the presence to such a great extent of slum areas in every district of the city. No doubt this is more pronounced in some localities than in others, but in the least affected districts the conditions are such that what are supposed to be homes are nothing better than hovels. The best proof of the danger of existing conditions is to be found in the fact that, especially in the bad seasons, when unemployment is general, the high mortality amongst the very young and very old, already referred to, can be traced to the weak physical condition of the inhabitants, directly due to these unhealthy surroundings. In my opinion the public health of the city will never be satisfactory until the slums are wiped out and at least 3,000 habitable houses provided for the inhabitants. A good deal has been done in England, and with excellent results, in the matter of substituting decent dwellings for abominable slums. It has been found for instance that the death rate from Tuberculosis has dropped from 287 to 96 per 100,000 of the population, and the same thing applies to other diseases due to dirt, with the result that the general death rate in England is considerably lower than in Ireland. One of the great national problems in the Free State which is being tackled by the Government, is the provision of proper housing accommodation in cities and towns, as it is impossible to have a healthy population under existing conditions.

Some progress has been made by the Corporation in the work of providing proper housing accommodation. The Corporation has erected 211 houses, and the Thomond Dwellings Company, 58. At the lowest calculation close on 3,000 houses would be needed to meet the requirements of the situation in the City. Overcrowding is at its worst in the Customhouse and Irishtown Wards, though it is bad enough in many other Wards—and unsanitary areas covering at least 40 acres on which so-called houses are crowded at a density of from 40 to 90 houses per acre, should all be cleared away. This may seem a drastic measure, but the removal of the slums is the only real remedy for the evil of overcrowding, and the most potent weapon in the fight against tuberculosis in Limerick, as it has proved to be elsewhere. The following is a summary of what has been done by the Corporation in an effort to solve the housing problem in the City.

In the year 1887 a sum of £2,400 was borrowed from the Treasury for building 24 cottages at Sir Harry's Mall and Athlunkard Street. These houses were completed in 1889, and 15 of them were let at 3/- and 9 at 3/6 each per week. Present rents—15 at 4/- and 9 at 4/8 per week each.

Another loan of £1,000 was obtained in 1894 for 7 houses, which were built in Mary Street and Gaol Lane; the cottages in Mary Street were let at 3/6, and those in Gaol Lane at 3/- each per week. Present rents—3 at 4/- and 4 at 4/8 per week each.

The site and buildings of the old Newgate Brewery were acquired from the Harbour Commissioners in 1895 at the nominal rent of 1/- per year, and a third loan was sought for and obtained by the Corporation of £2,000 for converting the old stores into 13 two-story dwellings, which were completed during the Mayoralty of our present esteemed Town Clerk and named "Nolan's Cottages" after him by the Council. The rent of each house is 4/- per week, and the upper floor is allowed to be sub-let at 2/9 per week. Present rent, 6/- each per week.

An Improvement Scheme was made by the Council in 1896 in respect of the unhealthy areas at Nicholas Street and John Street, and these districts were cleared, roadways and paths formed, and sewers laid down at a cost of £8,096. The Nicholas Street area was sold to the Thomond Dwellings Company for £1,000, and on it they have built 58 cottages which were let at rents from 3/6 to 4/- weekly. Present rent, 5/5 each per week.

In the year 1911 the Council built 17 houses on the John Street area and 6 at Miller's Row, under a loan of £4,700. The weekly rents of these houses are 3/-, 3/6, and 4/- per week for three-, four and five-roomed cottages, respectively. Present rent—15 at 4/4, 4 at 5/-, 3 at 5/9, and one at 6/7 per week each.

During the year 1914, 66 houses were completed and occupied, viz :—48 at Prospect and 18 at Garryoven, a loan of £6,180 having been got from the Treasury for their erection. These cottages are four and five-roomed and let at 4/- and 4/6 weekly. Present rent—38 at 5/9, 25 at 6/3 and 3 at 8/- per week each.

In 1925, 64 houses were completed under the Limerick County Borough Housing Order of 1922. The Government gave a grant of £29,528 for this scheme, and the Council supplied £3,601, proceeds of a Special Housing Rate, and £11,073 borrowed from the bank. The 64 houses are placed, viz :—6 at Church Street, 4 at Nicholas Street, 5 at Mary Street and 7 at St. Lelia Street, let at a rent of 11/- each per week; 8 at Mulgrave Street, rent 12/- per week; 24 at Cassidy's Lane, Garryoven, at 11/-, and 4 at 11/6 per week; 2 at Clare Street, at 11/-, and 1 at 11/6 per week; 3 at John Street, at 11/- per week.

At Farranstone, during 1928, 26 houses were erected which were sold to the tenants. There is a scheme in preparation for building 73 houses at Prospect and the Markets' Ground, Mulgrave Street.

CLEANSING OF THE CITY.

The concreting of the principal thoroughfares has been the first step in bringing Limerick up to the level of well managed modern cities as regards the effective cleansing of the streets. One result of this praiseworthy step is that the men of the cleansing staff who were formerly occupied in the main streets can now devote their attention to the back streets, lanes and alleys of the city. There are many things that might be done to improve the cleanliness and sanitary condition of the streets, for instance, the clearing and cleaning of all sewer grates and gutters, so as to prevent flooding of the channels and crossings after heavy rains, the occasional flushing of channel courses in the congested areas, so as to sweep away human excrement which cannot be properly removed by the brush. This flushing would tend to purify the air by removing the smell of the excrement and urine so often to be found in these areas. Chloride of lime or some other disinfectant should also be used in such cases.

The provision of proper sanitary accommodation is a matter of the utmost urgency. The absence of this in the poorer districts made necessary the provision of some means for removing this ugly evil. The pail system was first tried and did not prove to be a success, as, when the pails were worn out they were not replaced. Next came the night cars, but partly for reasons of economy and partly because they were not used to the extent to which they had a right to be, they have been discontinued. Until the practice of removing night soil regularly is universal it will be utterly impossible to have a healthy city, because the germs of many diseases, particularly Typhoid Fever and Consumption, exist in human excrement, and when the latter is allowed to dry on the streets and lanes the propagation of disease by means of these germs goes on to an alarming extent.

The continuation of the concreting of laneways is of great assistance in securing improved sanitary conditions, and I am glad to find that the Public Health Committee carried out my suggestion that a number of the iron carts used for the removal of mud and refuse be set aside for the purpose of having one of them placed in each of the several laneways in which at present, even with the bins in use, there is always a residue of night soil on the ground when the bins have been filled. These carts have been in use for some time past and the people are gradually coming to recognise the necessity for making full use of them in order to secure healthy conditions around their homes. By degrees it is to be hoped still fuller use will be made of these carts as people become more fully impressed by the necessity for taking these precautions against the spread of disease.

Returning to the question of concreted lanes I would like to lay stress upon the utility of flushing these laneways daily, thus securing a double purpose by removing dangerous dirt and at the same time giving a good example in cleanliness to the inhabitants.

The following return shows the number of loads of mud and manure removed off the streets and lanes of the city, and also the number of loads of water put out on the streets in dry weather during the past six years :-

Description	1929	1928	1927	1926	1925	1924
Manure	1203	1196	1466	3912	3236	4997
Mud	25597	26212	26831	25735	24225	24140
Water	2933	2632	1805	2873	1710	1372
Total No. of Loads	29733	30040	30102	32520	29171	30509

FOOD AND DRUGS ACTS.

There were submitted to the City Analyst, 214 specimens of food for analysis, which were sent by High Constable Forrest. Of the specimens of milk, 11 were adulterated or defective; 4 of the specimens of butter contained excess of water.

The subjoined table shows the number of analyses made during the year 1929, and the four preceding years :-

Description	1929		1928		1927		1926		1925	
	Specimens Analysed	Adulterated or Defective	Specimens Analysed	Adulterated or Defective	Specimens Analysed	Adulterated or Defective	Specimens Analysed	Adulterated or Defective	Specimens Analysed	Adulterated or Defective
Milk	164	11	158	15	129	9	55	7	278	25
Butter	12	4	17	10	10	3	14	3	12	5
Whisk	1	...	...	...	3	...	...	...	...	...
Cheese	1	...	3	...	...	...	...	...	11	2
Slim Milk	...	...	...	...	...	...	2	1	...	...
Margarine	10	...	4	...	10	...	...	...	...	...
Castor Oil	...	...	1	...	1	...	...	...	...	...
Cream	...	...	3	...	...	...	...	...	...	...
Wheaten Flour	...	...	1	...	...	...	...	...	...	...
Custard Powder	...	...	...	...	3	...	...	...	...	...
Cod Liver Oil	...	...	1	...	...	...	...	...	...	...
Tea	3	...	5	...	...	...	...	...	6	...
Ice-cream	3	...	...	...	6	...	...	...	6	...
Coffee	...	...	3	...	...	...	...	...	...	...
Strawberry Jam	1	...	1	...	...	...	...	...	...	...
Black Currant Jam	...	...	1	...	...	...	...	...	...	...
Raspberry Jam	1	...	1	...	...	...	...	...	...	...
Vinegar	...	...	...	...	3	...	...	...	...	...
Essence of Syrup	...	...	1	...	...	...	...	...	...	...
Carbolic Acid	...	...	1	...	...	...	...	...	...	...
Drugs	...	...	...	...	...	...	...	...	...	...
Flour	4	...	5	...	4	...	...	...	4	...
Black Pudding	...	...	...	...	...	...	...	...	...	...
Sausage	4	...	...	...	...	...	...	...	1	...
Corn Flour	3	...	...	...	...	...	...	...	1	...
Condensed Milk	...	...	...	...	3	...	...	...	...	...
Glycerine	...	...	...	...	1	...	...	...	...	...
Syrup Saville	...	...	1	...	1	...	...	...	...	...
Acetic Acid	...	...	...	...	1	...	...	...	...	...
Lime Juice	...	...	...	...	1	...	...	...	...	...
Salad Cream	...	...	...	...	1	...	...	...	...	...
Peppermint	...	...	...	...	1	...	...	...	...	...
Liquid Paraffin	...	...	1	...	...	...	...	...	...	...
Lard	...	...	3	...	...	...	...	...	...	...
Sugar	3	...	...	...	...	...	...	...	...	...
Marmalade	...	...	...	...	...	...	...	...	...	...
Strawberry & Apple Jam	3	...	...	...	...	...	...	...	...	...
Totals	214	15	211	25	181	12	71	11	319	32

RECORD OF SANITARY WORK.

The record of sanitary work performed in the City for the year ended 31st December, 1929, and the four previous years is shown below :—

WORK DONE	YEARS.				
	1929	1928	1927	1926	1925
Orders or Notices to abate Nuisances, make Connecting Drains or perform other Sanitary work served	508	486	455	360	416
Prosecutions for neglect of Orders or Notices	25	49	55	38	93
Convictions	25	46	56	31	73
Fines imposed by order of Justices	£8 15 6	£19 9 6	£15 7 6	£11 18 6	£23 17 6
Samples of Food and Drugs submitted for analysis	214	211	—	71	319
Prosecutions for Sale of Unwholesome or Adulterated Food—Convictions obtained	17	24	10	6	23
Fines imposed in respect of Unwholesome or Adulterated Food	15	17	10	6	22
Unwholesome Food seized and destroyed (lbs.)	£11 1 0	£17 8 0	£12 19 6	£9 11 6	£37 15 0
Houses, yards, and premises inspected by S.S. Officers	5270	5279	5232	4366	5364
Houses, rooms, or premises lime-washed	149	326	42	328	404
Dwellings disinfected	109	56	54	77	73
Disinfecting Chamber used by persons	—	—	—	—	—
Articles of Clothing disinfected therein	—	—	—	—	—
Clothing and Bedding destroyed to value of	—	—	—	—	—
Orders or Notices complied with	395	338	320	247	281
Reports sent to Medical Officers of Health	281	265	285	233	258
Reports received from Medical Officers of Health	255	240	236	165	195
Drains constructed	14	14	31	12	6
Water Closets constructed	23	32	31	25	20

DISINFECTION.

There were 109 houses disinfected after infectious diseases, or for other causes. As usual, the disinfectant was Formaldehyde, either in its gaseous form or in solution. No matter in which form the disinfection is carried out, if it is not accompanied or followed by the most thorough cleansing, by ordinary domestic means, such as scrubbing with soap and water, of every surface, corner and crevice of a room, and boiling of any wearing apparel that will stand it, the process cannot be looked upon as complete.

The Steam Disinfection Apparatus at the City Home should be used more frequently by the public, and it would be well if it were generally known that bedding, etc., should be thoroughly disinfected when any death occurs, even when the disease which has proved fatal was not infectious.

The use of the Disinfecting Chamber should be encouraged, and the small charge made for its use in the case of those who can pay for it, should not deter anyone from adopting this important precaution.

WATER SUPPLY.

The water supply from Clareville was sufficient except on 102 days in April, May, June and July, when it was found necessary to fall back on Rheboguc, the filter beds at which worked satisfactorily, and with the result that no unfiltered water has been supplied to the City during the year, but the pressure in the higher districts was undoubtedly weak, and complaints of shortage of water in those places have been frequent.

In connection with the change in the city water supply resulting from the Shannon Scheme, I beg to submit the following report from Professor Pierce F. Purcell, M. Inst. C.E. I may add that the report and its recommendation have my strong approval.

The Mayor and Corporation,
Limerick.

8th July, 1929.

Gentlemen,

Limerick Water Supply.

1. In accordance with the request conveyed to me in Mr. Peacocke's letter of March 21st, I have made an exhaustive study of the conditions under which Limerick City obtains its supply of water and beg to submit the following brief report which contains my conclusions and recommendations as to the steps which should be taken to remedy the defects in the system, which are at present so much in evidence.

2. The matters upon which I have been requested to advise were (1) The safeguarding of the interests of the Corporation where the water supply to the City may be interfered with by the work involved in the Shannon development and (2) the improvement of the supply to the town.

3. In regard to the first matter a conference was held on the 23rd of April at the Dublin office of the Chief Engineer to the Shannon Power Development. His Worship the Mayor, Councillor M. J. Keyes, Councillor Burke and myself were present and were met by Professor Rishworth and his assistants. As a result of the discussion which took place it was agreed that an 18" dia. pipe be laid from the Power Canal near Clonlara bridge and across the Shannon, so as to deliver into the existing filter beds at Clareville. For certain lengths this 18" dia. pipe is to be of Cast Iron lined with concrete and for the remaining portions of Centrifugally Spun Reinforced Concrete pipe. The exact position and respective lengths of same to be determined at a later date by Professor Rishworth and myself.

I estimate that the pipe line, with the fall available from the Power Canal, will be capable of discharging over four million gals. per day from the Power Canal to the filter beds at Clareville and that consequently when this is constructed the City of Limerick should have an ample margin to meet any normal demand likely to arise in the City. I am of opinion that this is the most practical solution of the difficulties for the water supply arising out of the Shannon Power Scheme. It removes all question of using the restricted and controlled dry flow of the Shannon after pollution by the sewage of Castleconnell which would constitute a very serious danger during the dry weather period. When this scheme is completed the pumping station at Reboque can be dismantled with a consequent annual saving of £263 based on the average of the last five years. The contract drawings for the pipe line from Clonlara are now complete and work should be put in hand at an early date. The alternative water supply from the Power Canal will therefore be ready as soon as the Power supply itself will be available.

4. Professor Rishworth also agreed to instal a pump house and plant capable of pumping 100,000 gals. per hour from Clareville to Newcastle. Two electrically driven centrifugal pumps will be installed in the pump house and sufficient room left to allow for the addition of a third unit should same be required at a later date. The necessary overhead line from the Shannon network will also be included in the work proposed. It is also hoped to construct a ground sill or low weir in the Shannon immediately below the existing intake

to the Clareville head-race, the effect of which will be to give increased head during the dry period. When this is done the head available for working the existing turbine plant should be much better than is at present experienced during the dry weather and if this is the case the electrically driven pumping plant which is about to be installed should not have to be called on to any considerable extent.

However it was agreed to leave the discussion of the charges for power and the allowances to be made for power to stand over to a later date when both parties would be in a better position to deal with the matter.

5. In concluding my report for this portion of the reference I would like to say that in my opinion the Shannon Power Development Board have met us fairly and that the interests of the Corporation are fully protected in so far as the above scheme has been agreed to.

Clareville Pumping Plant.

6. The works at Clareville which were completed in 1881 consist of four double acting pumps operated by four Hercules turbines. The head available at the turbines is normally 9 to 10 feet. Usually three units are operated at the same time and considering that the plant has been 38 years in use it is to-day operating in a very efficient manner.

7. It would appear to me that additional head, and therefore power, could be obtained by deepening and lining the tail-race but not having gone into this in detail I cannot say at the moment if some condition exists which would prevent this being done. I should mention, however, that when the alternative supply from Clonlara and the electrically driven pumping plant is available that the deepening of the tail-race and any necessary overhaul and resetting of the turbines could be undertaken without interfering in any way with the supply to Limerick. The advantage of deepening the tail-race and increasing the power available can be considered at a later date.

Clareville to Newcastle.

8. From Clareville a 16" Cast Iron rising main leads the water to Newcastle Reservoir. The actual lift from the clear water tank to the reservoir is about 167 feet and as the pressure at the pumps is 90 lbs. per square inch when three are working, the actual friction loss in the 5250 yards of pipe is roughly 48 feet. The discharge to this pipe line is estimated at 2 million gals. per day and from this I calculate that its carrying capacity has been reduced by about 30% as a result of incrustation.

9. Unfortunately this pipe line has been carried along very low lying ground and along the bank of the Shannon for a length of about 3000 yards the result being to subject a considerable length of the pipe to a pressure of more than the 200 feet head for which this class of pipe is designed. I estimate the maximum pressure on this pipe to be about 223 feet or 23 feet more than its normal working pressure.

While this in itself is not serious it more or less precludes the possibility of discharging a greater quantity than 2 million gals. per day through the pipe, as this could only be done by increasing the pressure at Clareville. Both the existing turbines and the proposed electrical plant will be capable of delivering an increased supply at a greater pressure, but I think it would be unwise to do so on account of the extra pressure on the first 3000 yards of pipe. A more serious matter however, is that this pipe line is laid through ground liable to flooding in winter time for a length of some 600 yards, and if a burst should occur in this section of pipe when covered by floods from the Shannon it will be a very serious matter for the City.

10. If at any time it should be considered necessary to increase the capacity of the main between Clareville and Newcastle an additional main should be laid further back from the river along a route which I have tentatively selected and by laying 4000 yards of new 16" main from Clareville to join up with the existing 16" main beyond Mulkear Bridge the capacity would be increased by half a million gals. per day and the liability to interruption of the supply from a burst in the flooded portion of the main eliminated.

Meters. Measurement of Supply.

11. Before examining the defects in the distribution system I wish to call attention to the entire absence of meters on the service mains and the supply system to Limerick, apart from the meters on individual supplies to industrial premises. Your Engineer, Mr. Peacocke estimates the daily supply from the number of strokes delivered at Clareville. He takes 21 gals. per throw per pump a quantity determined by noting the rise in level at Newcastle reservoir from a given number of pump strokes and while his estimate is no doubt reliable the quantity should be measured day by day by a recording meter, further the quantity delivered to the High and Low pressure systems should be measured near Carryowen reservoir and also means should be provided so that the quantity delivered to different districts of the city could be recorded.

12. A system of meters on the water supply to a city is just as essential as a system of book-keeping and accounting for any properly regulated business and without recording meters it is impossible to estimate or locate the waste of water in the different areas and hence to use the available water supply to the best advantage. The selection of meters and their location will require further consideration and may involve an expenditure of £800 to £1,000.

Water Consumption.

13. Adopting Mr. Peacocke's figure of 2 million gals. per day as the present consumption for all purposes and taking the average metered supply, as returned to me, 300,000 gals. per day, then the remaining 1,700,000 gals. per day for a population of 39,000 equals 48.7 gals. per head per day for purely domestic purposes. Considering the conditions of supply in Limerick and the number of houses without baths this is a grossly excessive amount and it should be possible to cut it down to thirty gals. per head. The fact that such small variation occurs between the day and night pressures in the City shows that the rate of consumption is little different at night from that during the day and this is borne out by the tests made by the Pitometer Engineering Co. in April, 1922, which tests showed little or no variation between the day and night rates of consumption.

14. Even allowing 33 gals. per head for domestic purposes the daily supply would then be

Metered Supply	300,000 gals. per day
Domestic Supply 39,000 people @ 33 g.p.d.	1,287,000
Total :-	1,587,000 g.p.d.

This would mean a reduction of 400,000 g.p.d. or a saving in consumption of 20%.

Waste Water.

In my opinion any water Engineer whom you may consult is bound to estimate the avoidable waste of water in Limerick at between 400,000 to 500,000 per day on the present figures. No doubt this waste is due to a large extent to leaky fittings and defective service pipes but some of it may also be due to leaks in the mains themselves. Owing to the low pressure in certain of the higher areas of the City tanks do not fill in the day time with the result that there is a continuous draw off for this purpose during the night. The recommendations for a new 15" service main which I make elsewhere if carried out will have the effect of increasing the day pressure available in the City and should allow tanks to fill during the day and give a better chance for waste water detection at night.

15. The location of leaks can only be done at night and will require regular, systematic and vigorous work which in the case of Limerick means sectioning the City and dealing with each area in detail. I would suggest that this work be put in hands immediately the new service main is completed and that an outside waste water Inspector with considerable experience in this class of work should be temporarily employed, preferably one who has no connection with the City. Due notice should be given in the local press and then rigorous action taken against all persons who fail to remedy, inside a limited time, all defects reported

by the Inspector. Unless the Corporation are prepared to take drastic action on reported cases, then it would be better to leave the system as it is to-day, as the existing low pressure acts as a check on the undoubted waste and reduces it to a certain extent.

16. In regard to local defects in the distributive system these will be more readily adjusted when normal pressure is made available by the proposed new 15" main. It would be wiser to postpone any further recommendations until then, as by doing so unnecessary expenditure may be avoided.

Service Mains. Newcastle Reservoir to Limerick.

17. Two 12" dia. Cast Iron Service Mains lead from Newcastle Reservoir mainly along the public road to the Garryowen service tanks. Some additional scour and air valves are required on these mains. One of these 12" pipes from the point where it leaves the public road to Garryowen tank is an old 12" main belonging to the early supply from the Reboge Pumping Station. This 12" main delivers 600,000 g.p.d. into the Garryowen service tanks and supplies the low pressure area in the City. It also by-passes its surplus capacity over 600,000 g.p.d. into the remaining 12" main which runs to the north of the service tank and along Mulgrave Street to the corner of Gerald Griffin Street where it joins on to the general distribution system to the high pressure areas. This main carries approximately 1,400,000 gals. per day.

18. In making my calculations for the hydraulic losses in the service mains to the City I have assumed that the present estimated consumption of 2,000,000 g.p.d. is divided in the approximate proportions observed by the Pitometer Engineering Co., in April, 1922, i.e.,

To Low Pressure Area	600,000 g.p.d.
To High Pressure Area	1,400,000 g.p.d.

I have also assumed that the present capacity of these 12" mains is only 60 per cent. of the capacity of a new pipe, i.e., a loss of 40 per cent. in carrying capacity due to incrustation. On the above basis I estimate that the pressure at the corner of Gerald Griffin Street should be equal to 63 feet head on the gauge, whereas the actual pressure measured on the gauge was 25 lbs. per square inch, equal to 58 feet or 5 feet less than my calculated pressure. This agreement between my estimate of the pressure and that actually found is sufficiently close to justify my assumption as to the degree of incrustation in the mains and other hydraulic factors used.

19. The difference in level between the Newcastle reservoir and the Corner of Gerald Griffin Street is 153 feet and of this over 90 feet is lost in friction in a total distance of 4040 yards. Of this 90 feet loss I estimate that 37 feet is lost in 1420 yards of high pressure 12" main between Garryowen service tank and the corner of Gerald Griffin Street. This is an excessive amount in this short distance and is due to this length of 12" main being worked at too high a capacity when delivering 1,400,000 g.p.d. To reduce this loss some additional high pressure service main or mains must be laid from Garryowen to the City.

20. In the first instance I considered the laying of 1420 yards of new 12" Cast Iron pipe from Garryowen to corner of Gerald Griffin Street which would give an immediate increase in pressure of 10 lbs. per square inch, i.e., raise the pressure from 25 to 35 pounds per square inch. However, on further consideration I decided it would be more advantageous to lay 2050 yards of service main from the North side of Garryowen Reservoir by Callows Green, under the Cottages in Blackboy Road and passing through the Asylum grounds and private property to join Roxborough Road at the Railway Bridge. Passing over the Railway Bridge the main will then run via Carey's Road and across the People's Park to join the 8" main from O'Connell Street, either at the end of Barrington's Street or Hartstonge Street. I have inspected the route proposed for the main on the ground and find that little difficulty would be experienced in running it. Owing to the existence of cellars along Barrington Street, it may be easier to go along Hartstonge Street and if it is decided to lay the main I will then prepare contract drawings and fix its definite location. I recommend that it should be a 15" dia. C. I. Spun pipe with concrete lining as this will prevent incrustation and serious loss of capacity and obviate the necessity for scraping at any future date

which will more than counter balance the slight extra cost of the concrete lining. The total cost of this main including all charges I estimate at £5,000. I had also considered a 12" dia. main for this but even though the cost of the 15" main will be some £600 more in my opinion the extra expenditure is fully justified.

21. The advantage of the route now proposed for the new 15" main is that it will conduct the water by the shortest route into the centre of the high pressure area and reinforce the pressure in both directions at the Crescent, and later on if found desirable can be connected up to the main at Roxborough Road but in the first instance no connection should be made until the corner of the Crescent is reached.

The existing pressure at the corner of Hartstonge Street is 18 pounds per square inch and I estimate that the new main will raise the pressure here by over 15 pounds per square inch and give considerable help along O'Connell Street and all the adjoining areas. It should go a long way towards giving satisfactory pressure at Mount Vincent Convent, on the summit of O'Connell Avenue, where at present the pressure is only 5 to 7 pounds per square inch in the day time. It is for this reason that I think it would be wiser to postpone any further additions to distribution system until the effects of the new main are observed. The laying of this new main will also relieve matters in the neighbourhood of Gerald Griffin Street, and by relieving the Mulgrave Street 12 inch main give an increase of about 8 to 10 pounds per square inch in this part of the town.

22. If required at any future time the proposed new 15 inch main can be continued from Garryowen to Newcastle Reservoir, a distance of 3520 yards. This would give a further 15 to 20 pounds pressure at Garryowen but I do not consider that this will be necessary for the present.

Leaving out any detail defects which may exist in the distribution mains in the City the important point is that owing to the excessive loss in friction in the overloaded main Mulgrave Street there is a totally inadequate pressure at the beginning of the supply area and this is reflected right along the system and particularly in the higher levels of the town.

When the waste of water in the town is overhauled and reduced to reasonable dimensions the advisability of doing away with the Garryowen service tanks and of connecting up the whole system of mains in Limerick should be considered as the differences in level of the streets hardly warrant the maintenance of separate systems.

23. There is a further important point to be considered and that is the effect of the pressure in the town if the consumption can be reduced by 20 per cent. that is to 1,600,000 g.p.d. This alone should save 15 feet friction loss between Newcastle Reservoir and Garryowen and give an additional pressure at Gerald Griffin Street and at the Crescent end of the new main or say 10 to 12 pounds per square inch.

24. I have provided in my estimate for the expenditure of £14,500 on waste water inspection, extra valves and interconnecting mains should same be found necessary, and as I have already stated it will be wiser to decide on this work after the new main is laid and the results of the waste water inspection known.

Filtration.

25. The water supply to Limerick is at present filtered by means of four slow sand gravity filters near the pump house at Clareville. At certain times of the year the water of the Shannon has a strong peaty discoloration and while matter in suspension can be removed by slow sand filtration the colouring matter in solution cannot be removed in such filters, and requires the addition of a chemical and the use of mechanical filters.

The area of the sand surface in each of the sand filters is 705 square yards and adopting the standard output for such filters of 400 gals. per square yard per day the normal capacity of the four filters is only 1,274,000 g.p.d. and when filtering two million gallons per day are carrying an overload of 75 per cent. but when one filter is being cleaned the capacity is only 952,000 g.p.d. and the remaining three filters are more than 100 per cent. overloaded and imperfect filtration must be the result. This cannot be considered a satisfactory state of affairs and although it will help somewhat if it is found possible to effect a reduction

in the consumption by 20 per cent., the extension of the filtering area by the construction of additional gravity filters or the modification of the whole system should be considered. In any case it is probable that working at this high rate the filter beds are not working at a uniform rate and leakage may exist which prevents adequate filtration. Should the Council desire it I will be glad to submit a detailed report and estimate on the best way of dealing with the filtration.

26. In conclusion I beg to make the following recommendations.

1. The installation of a system of meters at an estimated cost of £900
 2. The laying of 2050 yards of 15 inch C. I. concrete lined pipe from Garryowen to the Crescent £5000
 3. Provide for Waste water inspection and improvement to local mains and extra scour and air valves and sluice £1600
- £7500

When the Council have an opportunity of considering this report I will be glad to meet them and discuss the matters dealt with in the report.

I wish to acknowledge that I have had every help and assistance from your Surveyor, Mr. Peacocke.

Yours faithfully,

PIERCE F. PURCELL, M. Inst., C.E.

BATHS AND WASH HOUSES.

The complete absence of Baths and Wash Houses for the working classes and their families is one of the greatest stumbling blocks to sanitary reform in Limerick, and ought, here as elsewhere, be included in any large scheme for the provision of workmen's dwellings. In the meantime, as it were at all possible, it is most desirable that wash houses should be erected, so as to encourage habits of personal cleanliness, and avoid the numerous fatalities that arise out of drying clothes at home.

PUBLIC CONVENIENCES.

I desire again to bring under the notice of the Corporation that Limerick is very badly equipped in the matter of public conveniences. Eight of them are in existence, and another is in the course of erection at the top of William Street, but many more are necessary, and I would suggest as a beginning that two should be erected in the small park at the back of the Custom House—one for men and one for women, the absence of any convenience in the City for the latter being the subject of frequent complaint. Another convenience for their use should be put in the People's Park, the great advantage of having these structures in the parks being that the presence of caretakers would be a safeguard against any abuses. More frequent cleansing of the existing conveniences is most desirable. There should certainly be in the City at least one underground convenience, such as are to be found in all up-to-date cities.

The cost of erection would not be great, now that concrete is available for such purposes, and it is to be hoped steps will be taken for their erection without delay; thus bringing Limerick up to the level of other cities, especially as regards the providing of these conveniences for women.

BAKEHOUSES.

There are 24 bakehouses in the City, all of which are in good sanitary condition, and the men working in them all in good health. While no fault can be found with the bakehouses or the men working in them, it is a matter for regret that almost the entire output of the bakeries is what has been well described as the tasteless white pap of the devitalised loaf, which, according to leading specialists, probably creates a tendency to cancer. If people would only eat more brown bread they would be better able to resist disease and secure in a great measure the strength and vitality for which their forefathers were so famous.

SLAUGHTER HOUSES.

I am glad to be in a position to state that the meat supply of this City will in future be under a very efficient system of inspection. The Government are to appoint Seven Veterinary Surgeons for the purpose of inspecting all fresh meat intended for export. The Corporation agrees to pay the salary of one of these, and all of them when not occupied at the Bacon Factories will carry out a rigid inspection of all the Slaughter-houses in the City and will affix their stamp only when they satisfy themselves that the meat is sound and fit for human consumption.

DAIRIES AND COWSHEDS.

In the last report presented by Mr. P. A. Carroll, M.R.C.V.S., Inspector under the Dairies and Cowsheds Order, he stated that he visited and inspected all the cowsheds and cattle under his supervision, and found all the cattle healthy and the cowsheds kept clean.

OFFENSIVE TRADES.

The trades carried out in the City which may be considered as offensive comprise :—
 7. Properly speaking, all such trades should be carried on outside the City, as their presence in congested districts is certainly not in accordance with modern ideas of preserving public health. The keeping of pigs in such congested areas is also directly at variance with the same ideas, as it adds to the dangers involved in the overcrowding of these areas.

AMBULANCE CALLS.

The Ambulance, which is in charge of the Fire Brigade Staff, rendered assistance on 853 occasions during the year. The calls for the past six years are shown in the following table :—

Calls.	1929	1928	1927	1926	1925	1924
For Ambulance	795	969	771	728	571	605
For Fires	22	18	22	33	18	32
For Chimney Fires	36	40	51	38	39	32
Totals	853	1027	844	799	628	669

RAINFALL.

The rainfall for the year 1929 was as follows :—

March 0.98 ; April 1.33 ; May 1.85 ; June 1.77 ; July 4.01 ; August 4.96 ; September 0.93 ; October 4.01 ; November 5.90 ; December 7.83. Total—38.55.

In conclusion, I desire once more to return my sincere thanks to the members of the Public Health Committee for the manner in which they have acted on many suggestions made by me in reports submitted to them during the term under review. I share the regret so generally expressed at the death of Alderman Dr. W. A. Fogarty who was a useful and helpful member of the Corporation. I also thank the Medical Practitioners of the City, the City Surveyor and his Assistants, and the Officials of the Committee for their courteous co-operation with me in performing my duties as Public Health Officer.

I am, Mr. Mayor and Gentlemen,

Your obedient servant,

M. S. McGRATH.