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PUBLIC HEALTH DEPARTMENT.

REPORT ON THE HEALTH OF THE CITY OF LIVERPOOL DURING THE YEAR

— **1931** —

BY

W. M. FRAZER, M.D., CH.B., M.Sc., D.P.H., BARRISTER-AT-LAW.

Medical Officer of Health.



LIVERPOOL.

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PUBLIC HEALTH DEPARTMENT,

MUNICIPAL ANNEXE,

DALE STREET, LIVERPOOL.

June, 1932.

MY LORD MAYOR, LADIES AND GENTLEMEN,

I have the honour to submit to you herewith my first Annual Report, relating to the health of the City of Liverpool for the year 1931.

I desire to acknowledge figures and information for inclusion in the Report from the Town Clerk, the City Treasurer, the City Engineer, the City Analyst, the City Bacteriologist, the City Building Surveyor, the Director of Housing, and the Chief Veterinary Officer. I am also indebted to the Medical Officers of the City Hospitals, Sanatoria, and Institutions for the reports and statistics received, as well as to the officers of the voluntary hospitals and various charitable institutions, and others. A perusal of the information from such diverse sources scattered throughout the following pages, affords a good indication of the co-operation which exists between the Corporation's Public Health Department and the many other agencies, official and voluntary in the City which affect directly or indirectly the health of the community and the individual.

The year under review was marked, on the personal side, by the retirement of Dr. A. A. Mussen, who had held the office of Medical Officer of Health since the year 1924, and had been in the service of the Corporation for over 31 years. Dr. Mussen's period of service in the Department had seen profound changes in the Public Health organisation of the City, notably the rise in importance of personal hygiene, which showed itself administratively in the formation of such services as maternity and child welfare, the medical inspection and treatment of school children, and the institution of a vigorous campaign against the ravages of tuberculosis; and he was responsible for the organisation rendered necessary by the transfer of the duties in regard to medical assistance previously performed by the boards of guardians, to the City Council.

The Census which was taken in April, 1931, showed an increase in the population of the City of Liverpool of 50,493 persons as compared

with the corresponding Census taken in 1921. This increase was below the estimates of the Registrar General and the Medical Officer of Health, and a slight readjustment of the birth rates and death rates for the past ten years, as calculated on the estimated figures, has accordingly been made. It would appear that a considerable emigration of population to districts outside the city has been taking place for a good many years and this opinion is confirmed, in the Census returns, by the substantial increases of population which have occurred, e.g. in the Wirral—amounting in that case to 56·4 per cent. The Census also indicated the removal of a large proportion of the population from the centre of the city to the outskirts, following the erection of large numbers of houses by the Corporation on the periphery during recent years.

The birth rate for the year 1931 was 21·7 per thousand of the estimated population as compared with 22·1 for 1930 and an average of 22·7 for the previous five years. This is the lowest birth rate recorded with the exception of one of the war years (1918) when the figure was 21·5. It will be noted that the birth rate for Liverpool is high as compared with the whole of England and Wales with a corresponding figure for 1931 of 15·8.

The general death rate was 14·3 per thousand of the population as compared with 13·2 in 1930 and 15·5 in 1929. For England and Wales the death rate was 12·3 in 1931.

Infantile mortality during the year showed a rate of 93 per thousand births, which, with the exception of 1930, is the lowest recorded in any year in Liverpool. The corresponding rate for England and Wales was 66 and that for the 107 great towns and county boroughs 71 per thousand.

On the whole it is gratifying to note that the health of the city during the year was satisfactory, and there was a decrease in the total number of cases of infectious disease notified as compared with the two previous years. In the first three months of the year there occurred an epidemic of influenza, the excess of deaths in that quarter being chiefly from respiratory conditions arising out of that disease. The number of cases of diphtheria was somewhat less than in 1930, but a regrettable tendency has been observed during the past few years

for the incidence of this disease and the number of deaths occurring to increase to a considerable extent. Careful consideration was given to this question during the later part of the year and the suggestion was made that an extension of the system of immunisation against diphtheria to include entrants to public elementary schools, afforded a hopeful line of advance against the inroad of a disease which causes, directly or indirectly, many deaths and results in much invalidity. This suggestion was accepted by the Council, and an organisation is being evolved which will result, in the course of a few years, in all school children, whose parents agree to accept, obtaining a large measure of protection against a very dangerous and deadly disease.

Organisation of the hospitals and institutions transferred to the Corporation by the Local Government Act, 1929, is proceeding smoothly, and, as far as the present financial crisis will allow, rapidly. Although the multifarious details of administration presented by so many hospitals and institutions of diverse types have an appearance of great complexity, the principles of the preliminary organisation are essentially simple. In the first place, it was essential to establish some co-operation with the other Public Health Services, such as hospitals and clinics already under the control of the Corporation; in the second place to group the treatment of special diseases in particular hospitals and hence to obtain greater uniformity and efficiency; and lastly, to survey in detail the administration of individual hospitals with a view to reducing the overlapping of services, minimising waste and providing improved equipment and a higher general standard of efficiency in regard to medical and nursing staffs. A further matter which has received careful consideration during the year has been that of co-operation with the voluntary hospitals required to a certain limited extent by Section 13 of the Local Government Act, but in any case obviously desirable on general grounds. This problem presents many difficulties and will not be solved completely for many years. As far as the treatment of patients is concerned there is already in operation a system whereby transfers can take place between the voluntary and municipal hospitals, and, in addition, very many persons are directly admitted to the latter under the Penny-in-the-Pound scheme, payment being made on the basis of a block grant from the contributory fund. In view of the fact that the number of patients so treated in municipal hospitals has largely increased during the past

few years a stationary block grant is obviously, in principle, an unsatisfactory basis of co-operation between the two bodies concerned, but it is claimed that for the present the financial difficulties in which the voluntary hospitals find themselves render a change in the method of payment impracticable.

During the year under review a total of 3,182 houses have been erected by the city, including 1,810 constructed by the Corporation. Arrangements had been made for the incorporation of the district of Speke, to come into operation on 1st April, 1932. Speke is a rural area of 2,526 acres with an estimated population of 1,400 persons. A large amount of general information in regard to the housing position in the City is contained in the body of the present Report (pp. 268-285), and it will be evident that great efforts have been made by the Corporation in past years, and are continuing to be made, to improve the general standard of accommodation, to remove insanitary property and to abate overcrowding. The total number of insanitary houses in Liverpool existing on 1st January, 1932, was 1,633. The greatest housing evil is, however, overcrowding, and much time is spent by the sanitary inspectors in attempting to deal with this problem, which is largely an economic one. Up to the year 1919 the City's efforts were mainly in the direction of building housing accommodation within the central areas, but since that year the development of outlying districts has been undertaken by the Corporation, and at the end of 1931 a total of 21,068 houses and 169 flats had been completed. It is interesting to note the long period of time over which the Corporation's housing activities have extended since the earliest of the tenements in the central areas of Liverpool (St. Martin's Cottages) were opened for occupation in 1869. Altogether an estimated population of 110,000 are housed in the Corporation's housing estate, i.e., about 12 per cent. of the total population of the City.

A perusal of the pages of the present Report will suffice to indicate the large amount of work which is being performed yearly by the Corporation health services. The volume of work here described could not have reached its present standard of usefulness were it not for the high ideals of duty which animate the medical, inspectorial, nursing and clerical staffs of the Department, and I wish to acknowledge my appreciation of their co-operation with me during the past year.

I would also like to be permitted to express my warm thanks to the Chairmen and members of the various Corporation Committees concerned with the Public Health Department for the courtesy and kindness with which they have considered the various suggestions and recommendations made to them.

I have the honour to be,

Your obedient Servant,

W. M. FRAZER,

Medical Officer of Health.

VITAL STATISTICS.

CITY OF LIVERPOOL.

SUMMARY

OF

VITAL STATISTICS FOR 1931.

Area (land and inland water) ... 24,795 Acres (39 sq. miles)

Population (Census 1931) ... 855,539

do. (estimated to middle of Year, 1931) ... 856,483

Births ...	18,626	Birth rate ...	21.7	} per 1,000 of the population
Deaths (all causes) ...	12,243	Death rate ...	14.3	

Do. (under 1 year of age)	1,740	Infant Mortality rate	93 per 1,000 births.
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Do. from :—					
Seven principal Zymotic diseases	} 798	Zymotic death rate	} 0.93	} per 1,000 of the population	
Phthisis	989	Phthisis death rate	} 1.15		
Other forms of Tuberculosis	} 164	Non Pulmonary Tuberculosis death rate	} 0.19		
Cancer ...	1,128	Cancer death rate	} 1.31		
Respiratory diseases	2,397	Respiratory death rate	} 2.80		

CENSUS, 1931.

The Preliminary Report of the Census taken on 26th/27th April, 1931, was published in July, 1931, when the results showed a population of 855,539 persons for the City of Liverpool, comprising 405,658 males and 449,881 females. The population at the Census of 1921 was 802,940. On 1st April, 1928, the districts of Croxteth Park and West Derby Rural were incorporated into the city with a Census population of 2,106. The Census population of 1931, therefore, when compared with the Census population of the same area in 1921 shows an increase of 50,493, or 6·3 per cent. The corresponding increase for the total of the 113 towns with populations over 50,000 was 4·1, that of England and Wales being 5·1 per cent.

The following table shows the populations of the Registration Districts of the City of Liverpool at the Census years 1921 and 1931, and the estimated Mid-year populations for 1931, based on the Census figure given in the Preliminary Census Report.

Districts	Census 1921	Census 1931	Estimated Mid-Year Population, 1931
EXCHANGE	80,001	75,411	75,320
ABERCROMBY	45,202	42,325	42,266
EVERTON	124,414	111,305	111,037
KIRKDALE	69,857	64,417	64,306
EDGE HILL	91,535	81,952	81,757
TOXTETH	142,537	135,246	135,099
WALTON	83,290	89,488	89,588
WEST DERBY	77,380	99,756	100,441
WAVERTREE	76,934*	98,012	98,522
FAZAKERLEY	6,055	50,959	51,459
WOOLTON	5,735*	6,668	6,688
	802,940	855,539	856,483

* These figures are the populations for the areas of Wavertree and Woolton as constituted in the year 1924 when certain adjustments in these boundaries were made.

For further details of the Census Report see Appendix F.

BIRTHS AND DEATHS IN DISTRICTS.

The following table shows the population, number of births and deaths, and the rate per 1,000 in each district of the city for the year 1931 :—

Districts.	Estimated Mid-Year Population 1931.	BIRTHS.		DEATHS.	
		Number of Births.	Rate per 1,000	Number of Deaths	Rate per 1,000.
EXCHANGE	75,320	2,479	32.9	1,507	20.0
ABERCROMBY	42,266	989	23.4	792	18.7
EVERTON	111,037	2,607	23.5	1,899	17.1
KIRKDALE	64,306	1,463	22.7	945	14.7
EDGE HILL	81,757	1,819	22.2	1,213	14.8
TOXTETH	135,099	3,022	22.4	2,024	15.0
WALTON	89,588	1,311	14.6	1,025	11.4
WEST DERBY	100,441	1,796	17.9	1,146	11.4
WAVERTREE	98,522	1,619	16.4	1,138	11.6
FAZAKERLEY	51,459	1,421	27.6	469	9.1
WOOLTON	6,688	100	14.9	85	12.7
	856,483	18,626	21.7	12,243	14.3

POPULATIONS, BIRTHS AND DEATHS.

The following table shows the populations, births and deaths, with birth and death rates during the last 20 years (1912 to 1931) :—

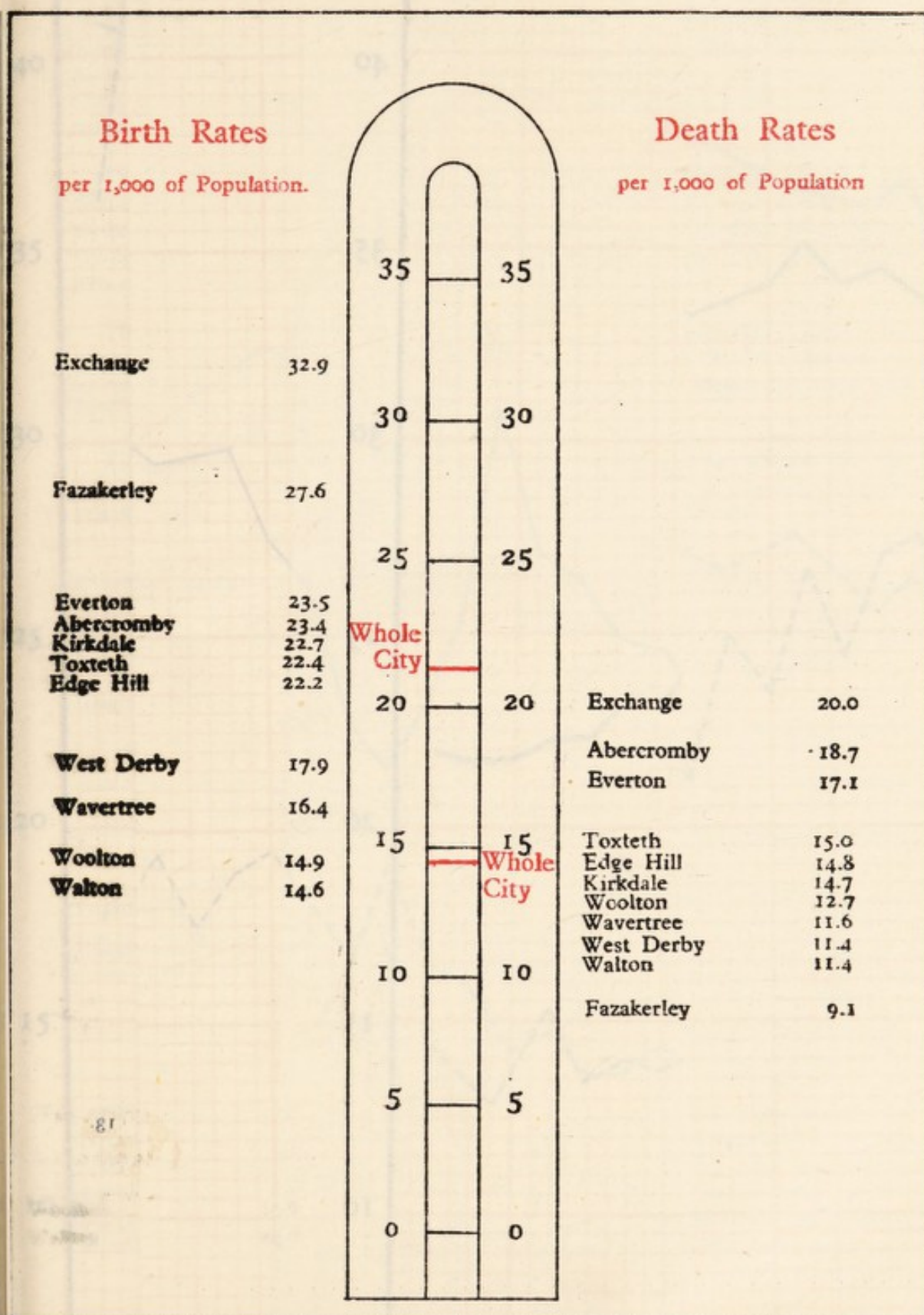
Year.	Estimated Mid-Year Population.	No. of Births.	Birth Rate per 1,000 of Population.	No. of Deaths.	Death Rate per 1,000 of Population.
1912	754,143	22,233	29.5	13,364	17.7
1913*	760,341	22,555	29.6	13,658	18.0
1914	773,467	23,065	29.8	15,046	19.4
1915	779,535	21,586	27.7	14,478	18.6
1916	785,657	20,679	26.3	13,943	17.7
1917	791,828	17,906	22.6	13,093	16.5
1918	798,048	17,133	21.5	15,267	19.1
1919	804,316	18,694	23.2	13,283	16.5
1920	810,632	25,039	30.9	12,852	15.8
1921	817,000	21,904	26.8	11,666	14.3
1922	820,663	21,467	26.1	11,992	14.6
1923	824,342	20,695	25.1	11,405	13.8
1924	828,038	20,559	24.8	11,390	13.7
1925	831,750	19,592	23.6	11,902	14.3
1926	835,479	19,792	23.7	11,626	13.9
1927	839,223	19,020	22.7	11,874	14.1
1928*	845,093	19,120	22.6	11,432	13.5
1929	848,873	18,888	22.2	13,181	15.5
1930	852,669	18,881	22.1	11,288	13.2
1931	856,483	18,626	21.7	12,243	14.3

* City area extended

NOTE.—The rates have been calculated upon the corrected populations as ascertained by the Census Returns of 1921 and 1931.

CITY OF LIVERPOOL.

COMPARATIVE VIEW OF THE BIRTH AND DEATH RATES PER 1,000 POPULATION IN THE DIFFERENT DISTRICTS OF THE CITY DURING THE YEAR 1931.



DEATHS IN PUBLIC INSTITUTIONS ARE TRANSFERRED TO THE DISTRICTS FROM WHICH THE PATIENTS CAME.

CITY OF LIVERPOOL.

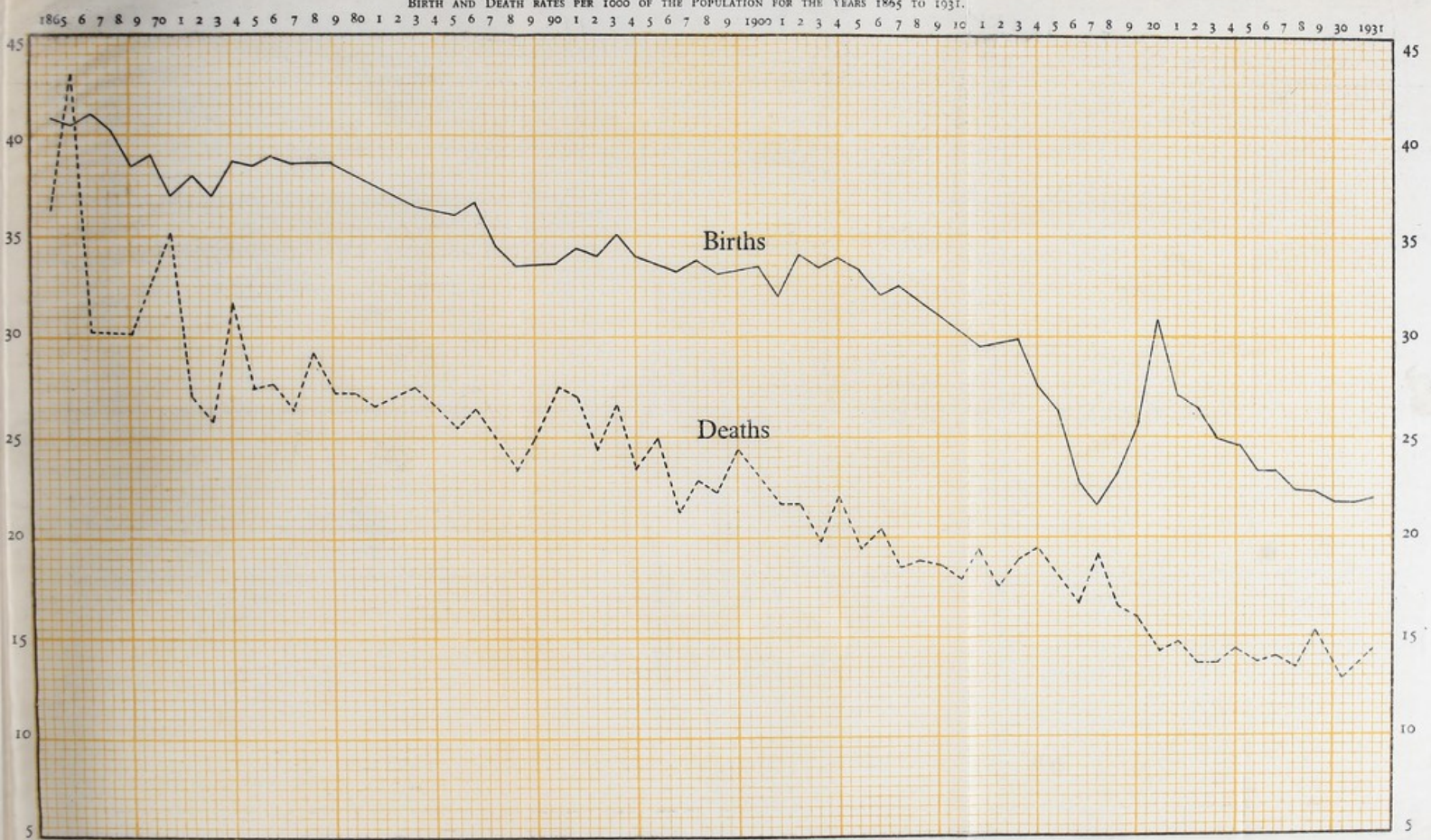
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NOTE.—The rates have been calculated upon the corrected population as ascertained by the Census Returns of 1921 and 1931.

FROM WHICH THE PATIENTS CAME.

CITY OF LIVERPOOL.

BIRTH AND DEATH RATES PER 1000 OF THE POPULATION FOR THE YEARS 1865 TO 1931.



BIRTHS.

The number of births recorded during the year 1931 within the city was 18,626, equal to a rate of 21·7 per 1,000 of the population, the average of the previous five years (1926-1930) being 22·7. Of the total births, 9,432 were males, and 9,194 were females. The number of illegitimate births was 855, or 4·6 per cent. of the total births, 422 being males and 433 females.

The Registrar General intimated that 330 births (168 males and 162 females) should be added to and 629 births (340 males and 289 females) deducted from the total number of births registered in the city. These corrections for transferable births having been made, the net figures are as given above.

The birth rate in the City of Liverpool was considerably above the average of the great towns, which was 16·0 per 1,000 of the population, as well as of England and Wales taken as a whole, where the rate was 15·8 per 1,000 for the year 1931.

The number of still-births registered was 722, as shown in the accompanying table. This represented 3·7 per cent. of the total births registered and ·84 per 1,000 of the estimated population.

LIVE BIRTHS.

	Males.	Females.	Total.
Legitimate	9,010	8,761	17,771
Illegitimate	422	433	855
	9,432	9,194	18,626

STILL-BIRTHS.

	Males.	Females.	Total.
Legitimate	379	300	679
Illegitimate	25	18	43
	404	318	722

DEATHS.

The total deaths registered in the city during the year numbered 13,024. Of these deaths 1,138 were those of non-residents, chiefly occurring in public institutions, nursing homes, etc., and these were excluded from the returns. On the other hand, the deaths of 357 Liverpool residents which occurred in other districts and the County Mental Hospitals, etc., were included in the returns for the year.

This gives a corrected number of deaths of 12,243, being 6,428 males and 5,815 females, for the year, equal to a death rate of 14·3 per 1,000 of the population. The death rates for England and Wales and the great towns during the year were identical, viz., 12·3.

During the five years (1911-1915) the average death rate was 18·6 per 1,000, whilst during the five years (1926-1930) the average rate was 14·0 per 1,000.

A comparison of the table on page 12 with previous reports will show that this improvement is not confined to the infant mortality nor to the mortality at any particular age, but is a general improvement affecting the whole of the population. It is plain that any variation in the *proportions* living at the respective age-periods would affect the death rate, and this with absolutely no change whatever in the condition of municipal sanitation. These proportions, however, vary very slowly and very slightly year by year in each district, so that yearly comparisons of the mortality rate of the same district may be fairly made, but one district should not be put into comparison with another unless the age and sex conditions of each are known, and the necessary corrections made.

CAUSES OF DEATH.

Attention is directed to the New Edition of the Manual of the International List of Causes of Death based on the Fourth Decennial Revision by the International Commission at Paris, 1929, which was issued at the end of the year 1931 on the authority of the Registrar General, for use in England and Wales.

Although it has not been found practicable to adopt the new List in its entirety for use in the current year as set out in the detailed table in Appendix G, nevertheless the Short List of Causes of Death tabulated in accordance with the new Manual appears in Appendix C as recommended by the Ministry of Health. The differences are, however, slight, and it is intended to adopt the new Manual for both the Short List and the more detailed one from 1st January, 1932.

Full details as to the causes of death are set out in Appendix G; in the same table the age at which each death took place and the district in which it occurred will also be found.

The following table gives a classification of the causes of death during the four quarters of the year, shown under 15 classes, and the number of deaths at each age-group :—

CLASSES.						QUARTERS.				YEAR 1931.
						March	June	Sept.	Dec.	
ALL CAUSES						4,185	2,711	2,219	3,128	12,243
I. Infective Diseases						1,043	508	374	520	2,445
II. General Diseases						371	377	338	366	1,452
III. Dis. of Nervous System						232	178	187	202	799
IV. do. Circulatory do.						701	578	469	611	2,359
V. do. Respiratory do.						1,087	390	236	684	2,397
VI. do. Digestive do.						173	149	175	161	658
VII. do. Genito Urinary do.						142	132	103	152	529
VIII. The Puerperal State						11	14	12	18	55
IX. Dis. of Skin, etc.						18	14	13	15	60
X. do. Bones, etc.						8	8	7	6	29
XI. Malformations						21	17	21	23	82
XII. Dis. of Early Infancy						156	130	127	155	568
XIII. Old Age						134	100	76	104	414
XIV. External Causes						85	114	80	107	386
XV. Ill defined Causes						3	2	1	4	10
Ages at Death.	{	Under 1 year				520	377	329	514	1,740
		1 to 5 years				523	192	114	233	1,062
		5 to 10 „				75	58	54	73	260
		10 to 15 „				50	46	30	38	164
		15 to 20 „				66	74	50	68	258
		20 to 25 „				73	80	58	89	300
		25 to 45 „				438	329	280	294	1,341
		45 to 65 „				1,022	667	606	748	3,042
65 and upwards						1,418	888	698	1,071	4,075

ANALYSIS OF DECLINE IN MORTALITY.

The accompanying tables (pages 10 and 11) show the deaths that have occurred in the city of Liverpool during the past 60 years. These have been separated into five principal classes of disease that are likely to be affected by the activities of the Health and other Municipal Departments, namely, infective diseases, tubercular diseases, respiratory diseases (including influenza), and digestive diseases (including diarrhoea and enteritis). These classes include the greater part of the diseases of infective origin. The deaths from cancer are placed in a separate column.

Despite the very great increase in population since 1871, the population having nearly doubled since then, the actual numbers of deaths per annum have fallen from an average of 14,700 in the decennium 1871-1880 to 12,243 in the year 1931. The general death rate has fallen from 28.5 to 14.3 per thousand, a fall of 50 per cent.

The greatest proportional decline has been experienced in the group of infective diseases, which includes all the infectious diseases with the exception of influenza; the decline has been steady and uniform, and the deaths now registered in this group exhibit a decline of no less than 79 per cent. during the 60 years.

A similar steady decline has been shown by the tubercular diseases, which have fallen to 36.1 per cent. of the earlier figure. These deaths now account for 9.4 per cent. of the total.

In the group of respiratory diseases, although the death rate has been halved during the period under review, namely, between 1871-1880 and 1931, the decline has not been continuous; rises occurred in 1881-90 and in 1911-20, and again in 1929, due in all cases to the prevalence of influenza. Although a marked decline in respiratory deaths has occurred, this decline is not commensurate with that recorded in deaths from all causes.

Digestive diseases, of which diarrhœa and other digestive diseases of infants form the most important section, showed at first a slight decline from 1871 to 1890; in 1891-1900 there was a rise to 107 per cent. of the rate experienced in 1871-80, taking the latter rate as equal to 100. From that time on there has been a most marked and rapid decline to 28 per cent. of the 1871-80 rate of mortality. This decline coincides in time with the great efforts that have been put forward in this city for the prevention of infantile mortality.

In contrast, however, there has been a considerable increase in the deaths from cancer during the past 60 years (see pages 10 and 21). The rate of mortality is now more than three times as high as in the seventies of last century. This increase is, however, mainly due to the increasing longevity of the people and to the better diagnosis of the disease.

If the general rate of mortality experienced in 1871-80 had prevailed during the year 1931, there would have been twice the number of deaths as those actually recorded, viz., 24,409 instead of 12,243, a saving of 12,166 lives being thereby effected.

CITY OF LIVERPOOL.

DEATHS FROM CERTAIN GROUPS OF DISEASES IN EACH DECADE FROM 1871 to 1930 and DURING 1930 and 1931.

Years.	(a) Infective diseases (less Diarrhoea and Influenza).	(b) Tubercular diseases.	(c) Respiratory diseases (including Influenza).	(d) Digestive diseases (including Diarrhoea).	Total Deaths from Classes (a),(b), (c) & (d)	(e) Cancer.	Total Deaths from all causes.
1871-1880	27,205	19,869	29,763	14,747	91,584	2,015	147,005
1881-1890	19,748	17,870	32,507	13,186	86,311	2,820	146,195
1891-1900	13,515	16,714	35,819	18,491	84,539	4,223	145,522
1901-1910	13,967	16,054	32,995	18,163	81,179	6,480	150,962
1911-1920	10,417	14,946	36,480	12,282	74,125	7,603	137,223
1921-1930	7,831	12,664	29,447	8,184	58,126	9,852	117,756
1930	663	1,230	2,242	663	4,798	1,080	11,288
1931.....	947	1,153	2,742	658	5,500	1,128	12,243

DEATHS EXPRESSED AS A PERCENTAGE OF TOTAL DEATHS FROM ALL CAUSES (Proportionate Mortality).

Years.	(a)	(b)	(c)	(d)	Total Deaths from Classes (a),(b), (c) & (d)	(e)	Total Deaths from all causes.
1871-1880	19.2	13.5	20.2	10.0	62.3	1.4	100.0
1881-1890	14.1	12.7	23.2	9.4	59.4	2.0	100.0
1891-1900	9.3	10.8	24.6	12.7	57.4	2.9	100.0
1901-1910	8.6	10.6	21.8	12.0	53.0	4.3	100.0
1911-1920	7.9	10.9	27.3	8.9	55.0	5.5	100.0
1921-1930	6.6	10.7	25.0	6.9	49.4	8.4	100.0
1930	5.9	10.1	19.9	5.9	42.5	8.1	100.0
1931.....	7.7	9.4	22.4	5.4	44.9	9.2	100.0

DEATH RATES PER 1000 POPULATION.

Years.	(a) Infective diseases (less Diarrhoea and Influenza).	(b) Tubercular diseases	(c) Respiratory diseases (including Influenza).	(d) Digestive diseases (including Diarrhoea).	Total Deaths from Classes (a), (b), (c) & (d)	(e) Cancer.	Total Deaths from all causes.
1871-1880	5.2	3.6	5.7	2.8	17.4	0.4	28.5
1881-1890	3.6	3.2	5.9	2.4	15.6	0.5	26.1
1891-1900	2.2	2.7	5.9	3.0	13.8	0.7	23.9
1901-1910	1.9	2.2	4.5	2.5	11.1	0.9	20.0
1911-1920	1.3	1.9	4.7	1.6	9.8	1.0	18.1
1921-1930	0.9	1.4	3.3	0.9	6.7	1.1	13.6
1930	0.8	1.4	2.6	0.8	5.6	1.3	13.2
1931	1.1	1.3	2.8	0.8	6.4	1.3	14.3

DEATH-RATES EXPRESSED AS A PERCENTAGE OF THE RATES EXPERIENCED IN 1871-1880 (Index Numbers).

1871-1880	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1881-1890	69.0	88.0	104.0	85.7	89.1	125.0	91.0
1891-1900	42.0	75.0	104.0	107.2	79.3	175.0	84.0
1901-1910	36.0	61.0	79.0	89.3	64.3	225.0	70.0
1911-1920	26.0	50.0	83.0	56.7	56.0	250.0	67.0
1921-1930	17.1	40.0	58.8	36.8	38.5	280.0	47.7
1930	15.4	38.9	45.6	28.6	32.2	325.0	46.3
1931	21.2	36.1	49.1	28.6	36.7	325.0	50.0

NOTE.—The rates have been calculated upon the corrected populations as ascertained by the Census Returns of 1921 and 1931.

TABLE SHOWING THE ANNUAL RATE OF MORTALITY PER 1,000 AS WELL AS THE TOTAL NUMBER OF DEATHS AT EACH OF TWELVE AGE-PERIODS DURING THE YEAR 1931 IN LIVERPOOL.

1931.	Under 1 year.	1 to 2	2 to 5	5 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50 to 60	60 to 70	70 to 80	80 and up- wards.	Total at all Ages.
Rate of Mortality per 1,000 living at ages indicated.	* 93	26.7	9.5	2.9	2.4	4.4	4.9	8.9	21.0	49.5	131.5	250.1	143
Total Number of Deaths at each Age-Period.	1740	625	437	260	422	614	607	973	1533	2044	2185	803	12243
Approximate Population	18626	23381	45868	89425	171905	139443	124384	109464	72908	41248	16620	3211	856483

* Column I. indicates the rate of mortality under one year per 1,000 births during the year.

DEATHS IN PUBLIC INSTITUTIONS.

In Liverpool the number of deaths which take place in Public Institutions is large, and this tends to show the proportion of people who in times of sickness have recourse to public and charitable institutions in the city, and no doubt also suggests that the institutions have a wide reputation and attract sufferers not only from within the city, but from a distance, as shown by the number of non-resident deaths.

The deaths in institutions during the year numbered 7,053, and included 1,138 persons who were non-residents in the city area. The number of deaths in the various institutions is shown in the following table :—

	Total Deaths.	Deaths of non-residents.
Walton Hospital	1,706	360
Belmont Road Institution	392	50
Smithdown Road Hospital	1,045	29
Mill Road Infirmary	754	26
Alder Hey Hospital	784	67
Kirkdale Homes	238	31
Olive Mount Children's Hospital	127	16
Royal Infirmary	330	117
David Lewis Northern Hospital	245	97
Royal Southern Hospital	160	37
Stanley Hospital	103	30
Royal Liverpool Children's Hospital	209	39
Maternity Hospital	67	24
Hospital for Women	17	12
Consumption Hospital	20	14
Hahnemann Hospital	21	3
Eye and Ear Infirmary	22	10
Garston Hospital	31	1
Carried forward ...	6,271	963

					Total Deaths.	Deaths of non-residents.
				Brought forward	6,271	963
City Hospital North	...	...	...	...	21	2
Do. South	...	...	...	...	27	1
Do. East	...	...	...	...	72	1
Do. Fazakerley	...	...	...	...	134	12
Do. do. Annexe	...	...	...	...	60	5
Do. Sparrow Hall	...	...	...	...	10	1
Sanatorium Fazakerley	...	...	...	...	81	5
Do. Broad Green	...	...	...	...	151	—
St. Joseph's Home	...	...	...	...	16	7
Home for Incurables	...	...	...	...	7	2
House of Providence	...	...	...	...	4	3
Tuebrook Villa Asylum	...	...	...	...	4	2
Turner Memorial Home	...	...	...	...	9	3
St. Augustine's Home	...	...	...	...	23	1
Other Institutions, Nursing Homes, etc.	...	...	...	...	163	130
					7,053	1,138
					<u>7,053</u>	<u>1,138</u>

Of the above deaths 5,046 took place in the transferred institutions, 1,225 in voluntary hospitals, 556 in city hospitals, and 226 in other institutions.

The following table shows the total number of deaths in public institutions during the years 1925 to 1931 :—

1925.	1926.	1927.	1928.	1929.	1930.	1931.
6,017	6,083	6,123	6,195	7,334	6,447	7,058

INFANT MORTALITY.

The infant mortality rate for 1931 is 93 per 1,000 births. Reference to the table on page 16 will show that the rate, in spite of fluctuations in individual years, has steadily declined during the past thirty years. At the beginning of this period the figure was nearly 200 deaths per 1,000 births.

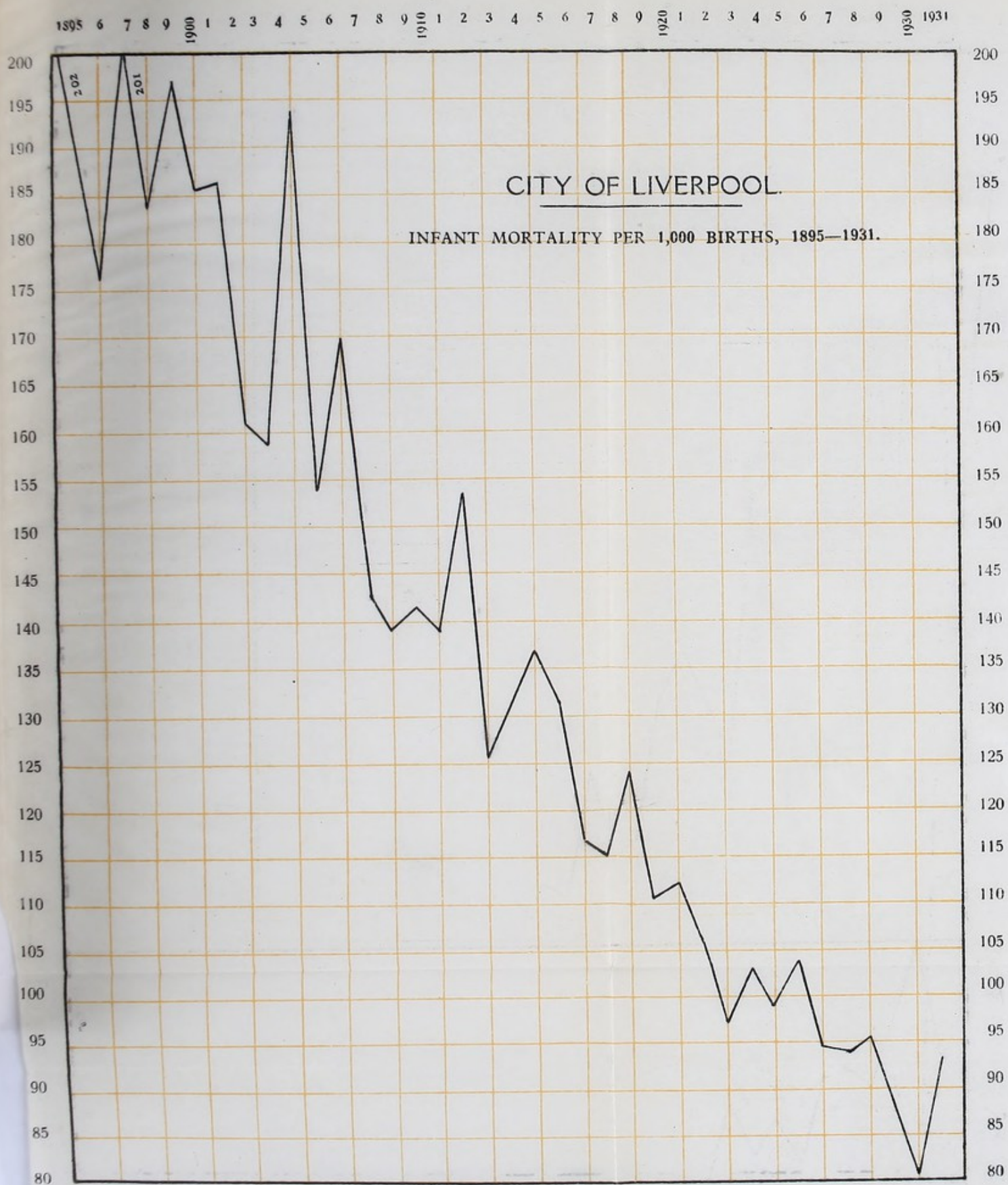
In 1930 the infantile mortality rate fell to 82. The slightly higher mortality in 1931 was due mainly to the epidemic of influenza which occurred in the first quarter of the year, the excess of deaths which occurred in that quarter and which were largely ascribed to respiratory diseases being clearly associated with the then prevailing epidemic.

In comparison with the first years of the present century the infantile mortality has been reduced to exactly one half in 1931.

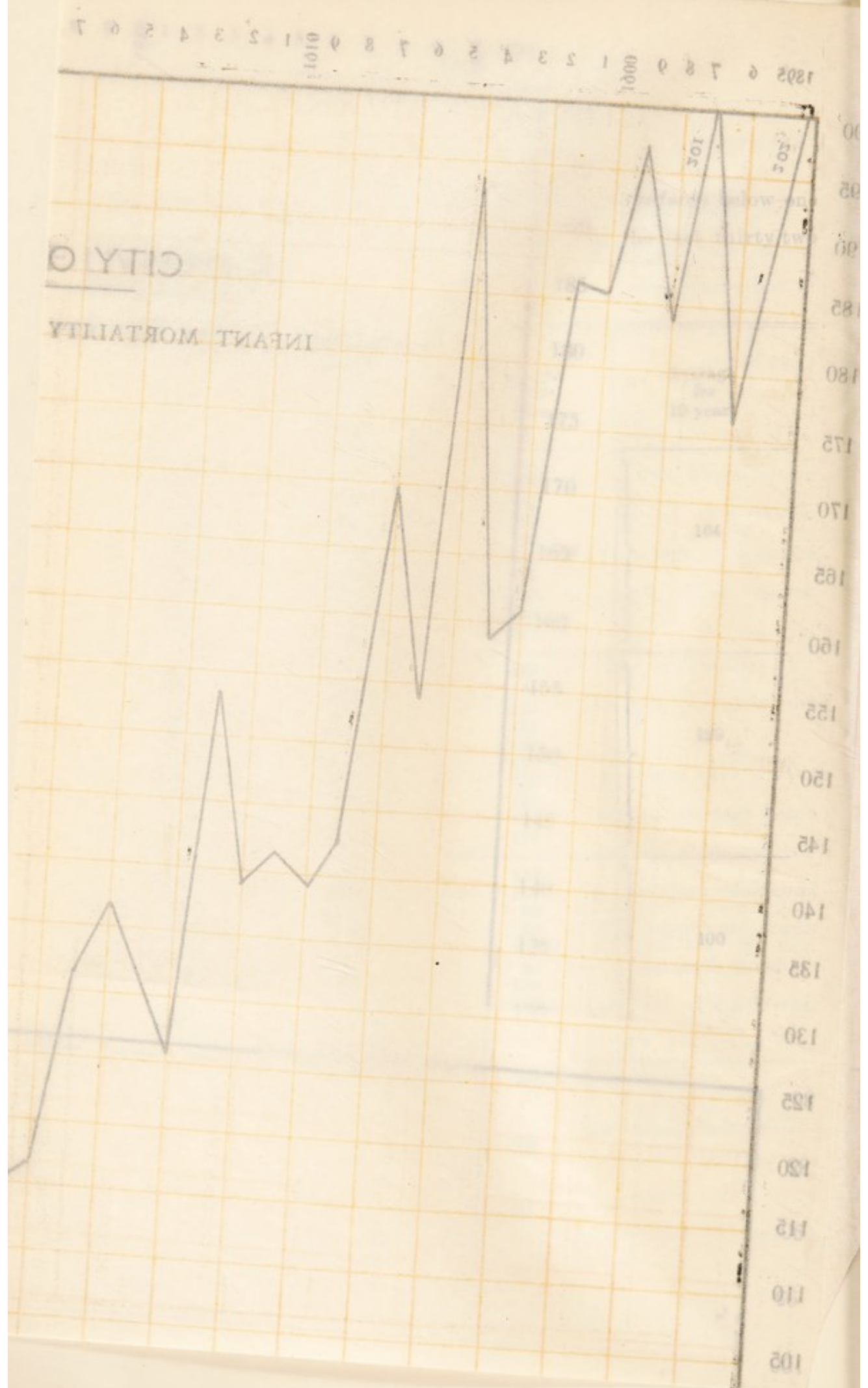
It is very gratifying to record this decline, and moreover, it may be noted that the numbers of deaths from all the usual forms of infantile diseases such as broncho-pneumonia, convulsions, prematurity, etc., have been reduced, but the most markedly affected cause is the one which, in former years, frequently proved the most fatal, namely, epidemic diarrhœa. The number of deaths under one year of age from this cause in the year 1931 was 271, as against an average of 1,000, or 1,100 thirty years ago. No doubt this result is due to a variety of causes, but one which has most materially hastened the decline is the initiation and carrying on by the Health Committee of schemes for the promotion of the welfare of motherhood and infancy, including the work of the health visitors, pre-maternity and infant clinics and milk depots, and the measures taken to prevent the breeding of flies.

The following table shows the number of deaths of infants below one year of age and the rate per 1,000 births during the last thirty-two years :—

Year.	No. of deaths below one year of age.	Rate per 1,000 births.	Average for 10 years
1900	4,247	186	164
1901	4,138	187	
1902	3,936	162	
1903	3,815	159	
1904	4,780	196	
1905	3,752	154	
1906	4,137	171	
1907	3,383	143	
1908	3,355	140	
1909	3,377	143	
1910	3,216	129	129
1911	3,466	154	
1912	2,778	125	
1913	2,987	132	
1914	3,219	139	
1915	2,866	133	
1916	2,421	117	
1917	2,071	115	
1918	2,137	124	
1919	2,055	110	
1920	2,826	113	100
1921	2,339	107	
1922	2,052	96	
1923	2,058	99	
1924	2,113	103	
1925	1,935	99	
1926	2,066	104	
1927	1,781	94	
1928	1,789	94	
1929	1,822	96	
1930	1,544	82	
1931	1,740	93	

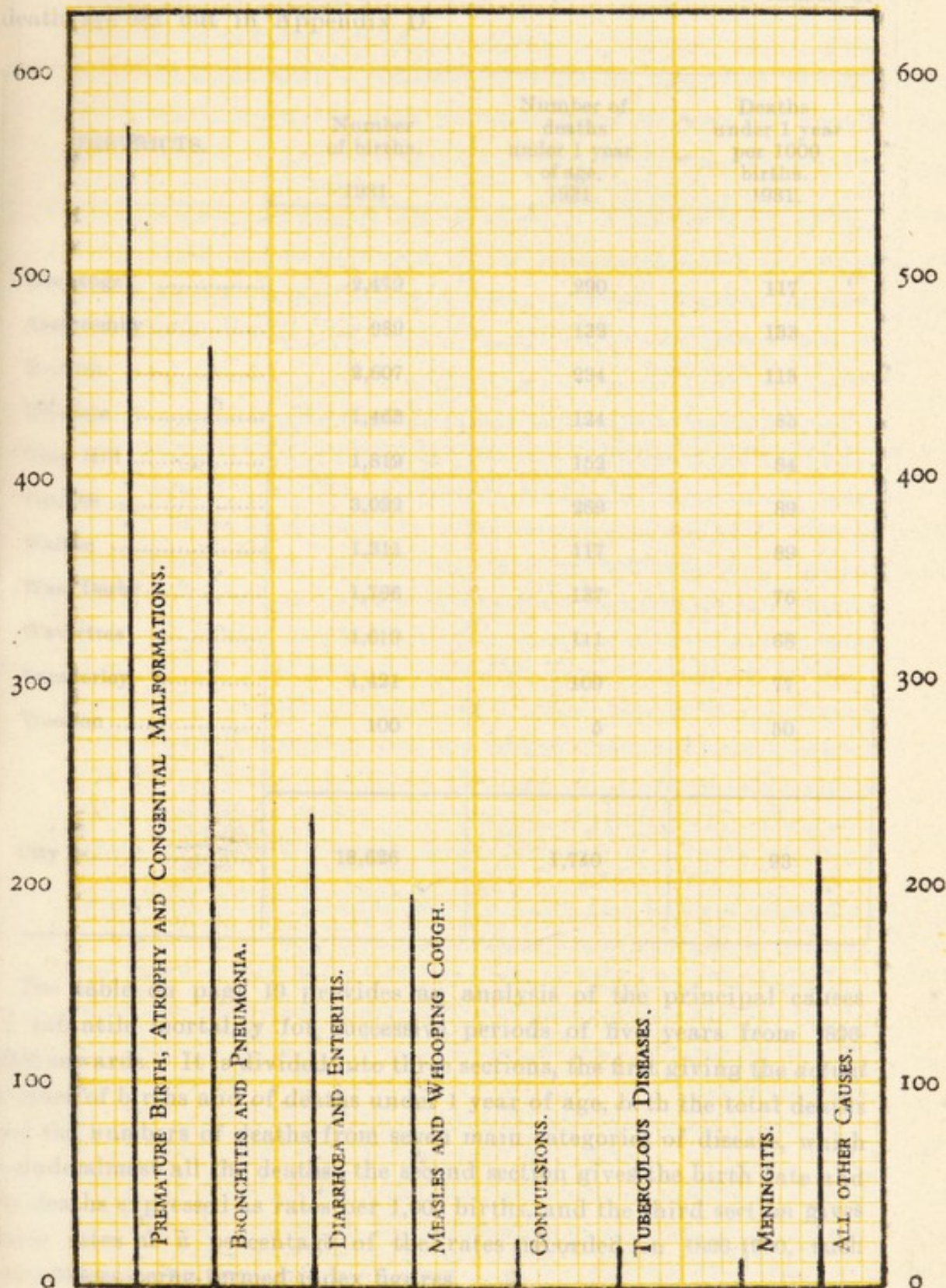


CITY OF
INFANT MORTALITY



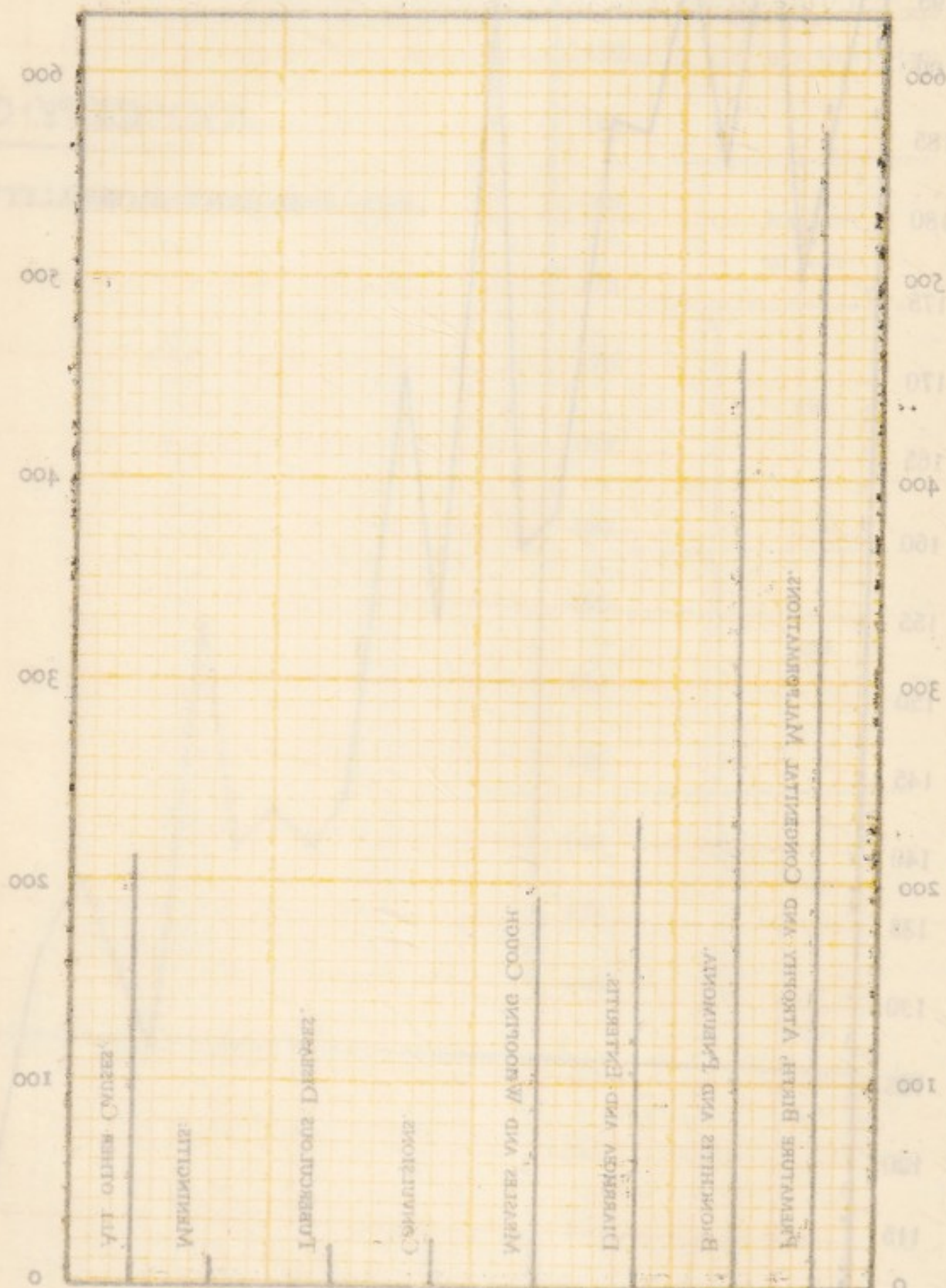
CITY OF LIVERPOOL.

CHART SHOWING THE PRINCIPAL CAUSES OF DEATHS OF INFANTS UNDER ONE YEAR OF AGE DURING 1931.



CITY OF LIVERPOOL

CHART SHOWING THE PRINCIPAL CAUSES OF DEATHS OF INFANTS UNDER ONE YEAR OF AGE DURING 1931.



The relation which the deaths of infants under one year of age has borne to every thousand births in the various districts of the city during the year 1931 is shown in the following table. The detailed causes of death are set out in Appendix D.

DISTRICTS.	Number of births. 1931.	Number of deaths under 1 year of age. 1931.	Deaths under 1 year per 1000 births. 1931.
Exchange	2,479	290	117
Abercromby	989	132	133
Everton	2,607	294	113
Kirkdale	1,463	124	85
Edge Hill	1,819	152	84
Toxteth	3,022	269	89
Walton	1,311	117	89
West Derby	1,796	137	76
Wavertree	1,619	111	68
Fazakerley	1,421	109	77
Woolton	100	5	50
City	18,626	1,740	93

The table on page 19 provides an analysis of the principal causes of infantile mortality for successive periods of five years from 1896-1900 onwards. It is divided into three sections, the first giving the *actual* number of births and of deaths under 1 year of age, both the total deaths and the numbers of deaths from seven main categories of disease, which include almost all the deaths; the second section gives the birth rate and the deaths expressed as rates per 1,000 births, and the third section gives these rates as a percentage of the rates recorded in 1896-1900, such percentages being termed index figures.

Examination of this table shows that whilst the annual number of births has remained approximately stationary, fluctuating from 22,340 to 18,226 per annum, the number of infantile deaths has fallen from 4,232 to 1,740, and the infantile death rate has accordingly fallen from 189 to 93 per 1,000 births; in other words, this rate has fallen to 50·0 per cent. of the figure recorded in 1896-1900. This great saving of life during the past 30 years coincides with the many improvements in housing and sanitation in Liverpool; and more particularly this fall has occurred simultaneously with the increasing attention which has been directed to infant welfare by the Health Department and other bodies, by the improvement in the provision of assistance for women in child birth and the advice and help extended to mothers and infants by health visitors, ante-natal, post-natal and infant clinics, hospitals and other agencies.

Investigation of the actual causes of death bears this out. The greatest reduction has occurred under the heading Nervous Diseases—reduction from 100 to 14·0, Tubercular Diseases to 17·7, and Digestive Diseases to 24·2. The deaths included under the heading Nervous Diseases are mainly those certified as from convulsions, which are frequently a symptom of the onset of acute infective diarrhœa, by far the commonest cause of death in the group of digestive diseases. Convulsions may also occur at the onset of other infectious diseases, and further may result from injuries during birth. The heading Tubercular Diseases also formerly included many deaths ascribed to *Tabes Mesenterica*, a term of uncertain meaning, but probably including numerous cases of chronic diarrhœa. The reduction in these three groups of diseases—1,574 fewer deaths in 1931—is then mainly a reduction in deaths from diarrhœa.

Equally marked and even more satisfactory is the reduction in the number of deaths from "external causes," which includes overlaying (see page 24) and burns and scalds. The great reduction in the deaths placed in this category testifies to the greater care taken of children and infants by parents. Much less satisfactory are the figures relating to general diseases and respiratory diseases. The figures in column 8 relating to Malformations, Premature Birth, Marasmus, etc., although they show a considerable saving of life—500 lives saved per annum—and though doubtless containing many deaths of children who were so malformed as to be incapable of prolonged life, yet show much room for improvement.

ANALYSIS OF CAUSES OF INFANT MORTALITY IN SUCCESSIVE QUINQUENNIA 1896-1930,
AND THE YEARS 1930 AND 1931. (A).—RECORDED DEATHS.

Yrs.	1 Births and Birth Rates.	2 Total Deaths Under 1 Year of Age.	3 General Diseases (excluding Tubercu- losis).	4 Tubercular Diseases.	5 Nervous Diseases	6 Respira- tory Diseases	7 Digestive Diseases : including Diarrhoea.	8 Malforma- tions, Premature Birth, Maras- mus, &c.	9 External Causes.
1896/1900	111,700	21,160	1,508	698	2,476	3,575	6,376	5,698	819
1901/1905	118,801	20,353	1,546	644	2,516	3,484	5,187	5,732	565
1906/1910	118,313	17,739	1,613	465	2,052	3,146	3,902	5,520	539
1911/1915	111,872	15,458	1,309	345	1,432	2,916	3,635	4,953	426
1916/1920	99,451	11,510	1,116	202	1,083	2,821	1,872	4,107	179
1921/1925	104,217	10,497	1,066	200	573	2,776	1,786	3,764	120
1926/1930	95,701	9,002	978	109	401	2,553	1,670	2,981	81
1930	18,881	1,544	119	16	65	414	250	563	21
1931	18,626	1,740	267	20	58	471	258	640	9

(B).—DEATH RATES PER 1,000 BIRTHS.

1896/1900	33·4	189	12·7	6·2	22·1	32·0	57·1	51·0	7·3
1901/1905	33·4	172	13·0	5·5	21·2	29·3	43·7	48·1	4·7
1906/1910	32·2	149	13·6	3·9	17·4	26·6	33·0	46·7	4·6
1911/1915	29·3	137	11·6	3·1	12·8	26·1	32·5	43·1	3·8
1916/1920	24·9	116	11·1	2·0	10·9	28·4	18·8	42·0	1·8
1921/1925	25·1	100	10·2	1·9	5·5	26·6	17·1	36·1	1·2
1926/1930	22·1	94	10·2	1·1	4·2	26·7	17·4	31·1	0·8
1930	22·1	82	6·3	0·8	3·4	21·9	13·2	29·8	1·1
1931	21·7	93	14·3	1·1	3·1	25·3	13·8	34·4	0·5

DEATH RATES EXPRESSED AS A PERCENTAGE OF THE RATES RECORDED IN 1896-1900.

1896/1900	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0
1901/1905	100·0	91·0	102·3	89·3	95·9	91·5	76·5	94·0	65·7
1906/1910	93	78·6	107·1	62·9	78·6	83·1	57·8	91	63·0
1911/1915	87	72·5	91·9	50·0	57·9	81·5	56·9	84	52·1
1916/1920	76	61·4	87·4	32·2	49·3	88·7	32·7	82	25·5
1921/1925	75·1	54·9	80·3	30·6	24·9	84·7	29·9	70·8	16·4
1926/1930	66·2	49·7	80·3	17·7	18·9	83·5	30·4	60·9	11·0
1930	64·4	43·4	49·6	12·9	15·4	68·4	23·1	58·4	15·1
1931	64·9	49·2	53·5	17·7	14·0	79·0	24·2	67·5	6·8

DIABETES.

The following table shows the incidence of fatal cases of diabetes in Liverpool since 1890:—

	Actual Numbers.			Average.			Rate per 100,000 population.	Ratio of males to females.
	Males.	Females.	Total.	Males.	Females.	Total.		
1890-1894	55	45	100	11·0	9·0	20·0	3·8	1·22
1895-1899	99	76	175	19·8	15·2	35·0	5·3	1·30
1900-1904	132	100	232	26·4	20·0	46·4	6·5	1·32
1905-1909	153	124	277	30·6	24·8	55·4	8·4	1·23
1910-1914	162	153	315	32·4	30·6	63·0	8·4	1·06
1915-1919	153	137	290	30·6	27·4	58·0	7·4	1·12
1920-1924	153	203	356	30·6	40·6	71·2	8·6	0·75
1925-1929	168	216	384	33·6	43·2	76·8	8·9	0·78
1929	28	34	62	—	—	—	7·1	0·82
1930	34	60	94	—	—	—	10·7	0·57
1931	25	64	89	—	—	—	10·4	0·39

The death-rate from diabetes rose steadily till 1910-14. It is probable that this rise was largely due to improved diagnosis. During the war the number of deaths showed a distinct fall, especially in 1917 and 1918; this was a real fall and not merely due to the absence of males on military service as, on the average of five years, females were equally affected with males. Since the war the figures have again risen, and are now above the average for the decade 1910-19. The disparity in the incidence, between the two sexes, previously in favour of the females, has since 1904 tended to change. In 1890-1894, 55 per cent. of the deaths were of males; but since 1920-25 the position has been reversed, and in 1931 only 28 per cent. were of males. It is not improbable that the greater attention that has recently been paid to this disease has led to its more frequent recognition as a factor in mortality.

The age at death has also greatly altered and, especially among males, there is a preponderance of deaths at ages over 60 and a reduction in deaths under this age. In the year 1910 66 per cent. of the deaths were under 65 years of age, in 1929 55 per cent., in 1930 63 per cent., and in 1931 56 per cent.

DEATHS FROM CANCER.

During 1931 there were 1,128 deaths attributed to cancer, equivalent to a rate of 1.32 per thousand. In 1871-1880 the rate of mortality was 0.4 per thousand; an increase of 230 per cent. has therefore occurred. The tables on pages 10 and 11 give the figures for the intervening years. Comparing the anatomical distribution in 1926-1930 and 1931 it will be observed that there is a tendency for deaths from cancer of the stomach, liver, etc., from cancer of the intestines, etc., and especially from cancer of other organs, mainly internal, to increase. Such fluctuations, however, are apt to occur under the influence of chance.

Since 1895 the increase in the number of deaths of males is 148 per cent. and of females 108 per cent., or an actual increase of 319 male and 307 female deaths per annum; the increase of population during this period being 203,960, or 31 per cent.

Part of the increase in mortality from cancer is due to the increased longevity of the population, more of whom survive into those periods of life when cancer is most frequent. Whilst during the last 50 years there has been an increase in recorded cancer mortality at each age period except the earliest, the increase is most marked at the three later age periods, that is at ages over 60 years. The increase in recorded cancer mortality is mainly at old age.

The increased mortality from cancer was, therefore, (a) mainly among males; (b) most marked in the later years of life. There is evidence to show that the increase is especially in the case of cancer of the stomach and other internal organs where the disease is most difficult to diagnose. A great part of the increase is probably not real but statistical, and due to improved diagnosis. The term, old age, for example, is less frequently used as a cause of death than in former years; doubtless many deaths from cancer were formerly concealed under this title.

CANCER.

DEATHS FROM CANCER, SHOWING THE PARTS OF THE BODY AFFECTED, DURING THE YEARS 1926 TO 1931.

Part of the Body affected.	1926.			1927.			1928.			1929.			1930.			Average 1926-30.			1931.		
	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.	M.	F.	Total.
Buccal Cavity	80	9	89	76	7	83	102	10	112	85	10	95	70	10	80	83	9	92	72	14	86
Stomach, Liver, etc	140	125	265	137	113	250	192	127	319	178	155	333	167	141	308	163	132	295	168	160	328
Intestines, etc	97	101	198	107	106	213	98	106	204	105	107	212	100	106	206	102	105	207	118	102	220
Breast	1	86	87	3	81	84	—	84	85	—	82	82	1	111	112	1	89	90	—	107	107
Female Genital Organs	—	100	100	—	110	110	—	116	116	—	107	107	—	81	81	—	102	103	—	88	88
Skin.....	10	6	16	4	7	11	8	4	12	11	4	15	7	7	14	8	6	14	3	5	8
Other or Unspec- ified Organs	166	72	238	156	70	226	150	103	253	186	74	260	158	121	279	163	88	251	173	118	291
Totals..	494	499	993	483	494	977	550	550	1100	565	539	1104	503	577	1080	520	532	1052	534	594	1128

DEATHS FROM EXCESSIVE DRINKING, &c.

It is still gratifying to note that the deaths due to or accelerated by excessive drinking continue to remain low, the number being seven.

The number of deaths of infants under one year of age from suffocation was eight.

Improved habits and conditions, wider educational influences and other agencies, including those associated with the welfare of motherhood and infancy have all played their part in promoting a more temperate use of alcoholic drinks with results which are eminently satisfactory. Housing operations have unquestionably contributed towards improving the general conditions of life and social habits of the people formerly living in insanitary surroundings in slum areas. The improved condition of the children is especially noticeable; the reports in connection with medical inspection of school children in the poorer localities show welcome improvement, details in reference to this subject being given in the annual report to the Education Committee.

The following table shows the number of deaths from excessive drinking from the year 1900 to date, together with the number of deaths of infants under one year of age from suffocation for the same period :—

	Deaths from excessive drinking.			Deaths from suffocation under 1 year of age.
	Males.	Females.	Total.	
1900—1909 (yearly average)	101	63	164	94
1910—1919 (yearly average)	53	28	81	51
1920—1924 (yearly average)	11	3	14	15
1925	2	4	6	16
1926	1	4	5	10
1927	5	4	9	14
1928	2	2	4	6
1929	1	1	2	2
1930	4	—	4	12
1931	2	5	7	8

DEATHS FROM GAS POISONING.

Deaths from this cause fall under two headings, namely, from accidental poisoning and suicide. An inquiry is made into each case and detailed reports are sent to the Ministry of Health and the Board of Trade. The following table gives the numbers for the last five years, viz. :—

Year.	Accidentally Killed.	Suicide.
1927	6	20
1928	8	29
1929	9	49
1930	4	46
1931	5	49

METEOROLOGY.

The Director to the Liverpool Observatory and Tidal Institute, Bidston, has kindly furnished the following tables relating to Meteorological observations made by him at the Observatory, Bidston :—

Latitude 53° 24' N. Longitude 3° 4' W.

Height above the Mean Level of the Sea 202 feet.

1931.	Barometer. Mean.	Temperature. Mean.	RAINFALL.		Mean Humidity of the air (Complete Saturation equals 100).
			Amount.	No. of days on which 0·01 in. or more fell.	
	Inches.	Degrees F.	Inches.		
January	29·864	39·4	2·539	22	87
February	29·830	40·0	2·146	18	82
March	29·981	39·1	0·252	6	74
April	29·866	45·1	2·169	16	81
May	29·836	51·7	2·512	14	77
June	29·979	56·5	4·555	14	81
July	29·768	58·4	2·177	16	84
August	29·832	56·9	5·605	17	81
September	30·181	53·6	3·079	15	83
October	30·127	49·2	1·780	12	80
November	29·698	46·2	4·575	21	89
December	30·237	43·1	1·283	15	75

DIFFERENCE FROM THE AVERAGE QUANTITIES OBSERVED DURING THE
LAST 65 YEARS.

1931.	BAROMETER.		TEMPERATURE.		RAINFALL.	
	Above Average.	Below Average.	Above Average.	Below Average.	Above Average.	Below Average.
	Inches.	Inches	Degrees.	Degrees.	Inches.	Inches.
January	...	0.065	...	0.4	0.316	...
February	...	0.091	...	1.0	0.406	...
March	...	0.098	...	3.0	...	1.543
April	...	0.036	...	1.5	0.514	...
May	...	0.126	...	0.5	0.517	...
June	...	0.014	...	1.0	2.502	...
July	...	0.180	...	2.0	...	0.578
August	...	0.082	...	2.9	2.407	...
September	0.215	...	...	2.6	0.300	...
October	0.249	...	...	0.5	...	1.536
November	...	0.186	2.4	...	1.955	...
December	0.384	...	3.0	...	...	1.517
Year's Totals ...	...	0.003	...	0.7	3.743	...

MONTHLY ANALYSIS OF WIND OBSERVATIONS DURING 1931.
Compiled from observations taken at 0700, 1300, 1800 and 2100.

1931	Force (0-12).				Direction							
	8 or over	4-7	1-3	Calm	N	NE	E	SE	S	SW	W	N.W
January ...	5	56	59	4	5	1	8	16	7	22	45	16
February ...	2	56	43	1	11	2	7	12	6	28	31	14
March ...	0	72	50	2	6	18	54	7	6	6	8	17
April ...	0	69	48	3	15	3	9	15	6	5	42	22
May ...	0	32	87	5	7	4	17	28	10	19	18	16
June ...	0	43	72	5	4	5	18	7	9	20	34	18
July ...	0	54	67	3	7	0	0	6	9	22	45	32
August ...	0	69	54	1	13	28	19	11	6	2	20	24
September ...	0	33	81	6	19	14	8	9	7	5	19	33
October ...	0	38	80	6	17	8	9	15	11	21	23	14
November ...	0	57	60	3	4	1	13	56	18	12	12	1
December ...	4	72	43	5	5	1	3	38	3	9	36	24
Year's Totals ...	11	661	744	44	113	85	165	220	98	171	333	231

1931 Week Ended	Baro- meter Mean	Temperature			Rainfall		Wind Mean direc- tion	Median Hum- idity %	Sun- shine hours	Ultra- Violet Radia- tion
		Maxi- mum	Mini- mum	Mean	Amt. inches	Dur- ation hours				
January 3	29.28	50.0	31.0	38.7	1.944	39.4	W	87.0	13.1	—
" 10	30.27	46.0	23.7	34.5	0.102	6.7	W	92.4	12.3	—
" 17	29.88	51.0	30.4	41.2	0.484	12.4	W	83.6	9.8	—
" 24	29.70	48.0	34.8	42.9	0.64	26.7	W	86.0	12.9	—
" 31	29.81	45.0	32.2	39.5	0.811	23.9	W	85.7	14.7	—
February 7	30.01	45.0	33.8	38.3	0.256	11.9	W	86.4	8.9	—
" 14	29.68	51.6	32.7	41.1	0.401	15.7	W	80.1	22.2	1.7
" 21	29.69	51.2	33.2	38.8	0.685	17.3	W	77.3	15.0	1.3
" 28	29.92	54.8	30.4	41.3	0.803	22.3	SW	85.5	17.2	1.3
March 7	29.83	40.8	23.0	33.6	0.027	2.4	ENE	71.6	21.0	1.6
" 14	29.76	46.4	26.2	35.4	0.031	3.2	W	78.4	35.3	2.3
" 21	29.81	60.2	32.6	45.9	0.066	2.1	E	75.1	29.0	1.8
" 28	30.27	55.8	32.1	43.0	0.067	5.0	E	75.8	39.2	1.8
April 4	29.90	50.8	34.1	40.7	0.763	31.8	E	74.8	13.0	1.3
" 11	29.92	63.2	40.2	49.1	0.173	16.6	SE	80.1	25.2	1.6
" 18	30.04	50.3	36.8	44.2	0.389	12.1	W	81.9	24.6	1.6
" 25	29.70	54.8	38.2	45.2	0.767	15.8	W	78.8	18.1	1.1
May 2	29.80	54.0	40.6	45.9	0.161	10.2	NW	80.8	52.4	3.4
" 9	29.86	65.1	38.8	50.5	0.208	7.5	NW	75.2	36.3	3.3
" 16	29.84	64.1	44.0	53.4	0.567	21.6	SW	79.4	30.4	2.1
" 23	29.80	60.7	40.0	49.9	0.724	24.0	SE	77.3	34.2	1.7
" 30	29.84	70.6	46.2	57.1	1.0	18.2	SE	78.1	43.8	3.3
June 6	29.90	68.7	44.4	53.8	1.633	35.9	E	84.7	32.6	1.8
" 13	29.82	69.0	52.0	58.9	0.799	16.7	W	82.7	23.9	1.8
" 20	29.81	65.8	48.0	56.1	1.988	15.4	W	78.3	27.8	2.6
" 27	30.21	67.2	46.0	58.4	0.137	7.1	W	77.8	39.2	2.1

1931 Week Ended	Baro- meter Mean	Temperature			Rainfall		Wind Mean direc- tion	Median Hum- idity %	Sun- shine hours	Ultra- Violet Radia- tion	
		Maxi- mum	Mini- mum	Mean	Amt. inches	Dur- ation hours					
July	4	29.97	67.0	50.8	58.8	0.319	4.2	W	75.5	45.9	3.3
„	11	29.79	66.2	52.1	58.8	0.622	14.4	W	82.8	47.3	5.7
„	18	29.70	68.8	52.7	59.0	0.83	16.1	W	79.5	31.1	3.3
„	25	29.82	71.7	52.6	59.8	0.176	7.6	W	79.4	28.6	4.0
August	1	29.77	66.9	51.2	58.5	0.232	8.8	W	83.0	28.7	2.1
„	8	30.01	74.0	48.0	59.4	1.9	32.6	NE	81.9	37.3	1.5
„	15	29.88	67.4	48.2	56.7	2.1	35.4	W	86.0	23.0	1.0
„	22	29.51	66.0	48.4	57.3	1.52	17.3	W	85.3	31.4	1.0
„	29	30.10	67.4	47.0	55.8	—	—	E	71.9	54.2	1.7
September	5	29.76	67.7	45.8	54.8	1.775	26.2	E	81.0	25.5	—
„	12	30.12	57.1	42.6	51.0	0.791	21.4	W	78.2	49.2	1.4
„	19	30.31	64.2	48.2	56.0	0.432	19.8	W	90.6	6.0	—
„	26	30.54	57.4	43.2	52.8	—	—	NW	80.2	25.7	—
October	3	30.07	62.0	47.0	54.8	0.204	6.3	SW	80.0	10.6	—
„	10	29.97	64.9	47.0	55.8	0.803	11.7	W	83.0	19.1	1.0
„	17	30.37	59.4	42.3	50.6	0.031	0.9	SE	85.1	40.6	—
„	24	30.05	54.8	32.4	43.8	—	—	N	75.2	32.0	—
„	31	30.15	52.3	32.1	42.6	0.83	18.8	W	75.6	29.1	—
November	7	29.65	60.1	41.2	50.4	0.665	17.7	SE	84.9	17.4	1.0
„	14	29.22	51.2	40.2	46.6	1.618	37.9	SE	88.1	7.8	—
„	21	30.03	50.0	34.6	43.2	0.579	20.8	SE	87.2	13.3	—
„	28	29.71	53.2	35.0	46.4	1.7	30.5	SE	91.1	5.6	—
December	5	29.96	58.2	31.8	43.7	0.366	11.5	SE	87.8	2.6	—
„	12	30.25	50.8	41.8	46.4	0.043	7.2	NW	86.1	8.9	—
„	19	30.49	49.2	30.3	40.9	0.205	6.9	SE	82.7	9.8	—
„	26	30.54	53.2	30.0	43.1	0.283	14.2	W	88.6	5.2	—

Date	Time	Lat.	Long.	Wind	Force	Bar.	Therm.	Humid.	Dir.	Dist.	Remarks
July	1	15-07	61-01	SE	5-8	30.8	61.0	75.0	SE	10.0	Clear
"	11	15-19	61-1	SE	5-8	30.8	61.1	75.0	SE	10.0	Clear
"	12	15-30	60-4	SE	5-7	30.7	60.4	75.0	SE	10.0	Clear
"	20	15-33	61-1	SE	5-8	30.8	61.1	75.0	SE	10.0	Clear
"	21	15-37	60-8	SE	5-8	30.8	60.8	75.0	SE	10.0	Clear
"	22	15-41	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	23	15-45	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	24	15-49	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	25	15-53	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	26	15-57	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	27	16-01	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	28	16-05	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	29	16-09	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	30	16-13	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	31	16-17	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
August	1	16-21	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	2	16-25	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	3	16-29	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	4	16-33	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	5	16-37	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	6	16-41	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	7	16-45	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	8	16-49	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	9	16-53	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	10	16-57	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	11	17-01	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	12	17-05	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	13	17-09	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	14	17-13	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	15	17-17	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	16	17-21	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	17	17-25	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	18	17-29	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	19	17-33	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	20	17-37	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	21	17-41	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	22	17-45	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	23	17-49	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	24	17-53	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	25	17-57	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	26	18-01	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	27	18-05	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	28	18-09	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	29	18-13	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	30	18-17	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	31	18-21	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
September	1	18-25	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	2	18-29	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	3	18-33	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	4	18-37	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	5	18-41	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	6	18-45	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	7	18-49	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	8	18-53	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	9	18-57	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	10	19-01	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	11	19-05	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	12	19-09	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	13	19-13	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	14	19-17	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	15	19-21	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	16	19-25	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	17	19-29	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	18	19-33	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	19	19-37	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	20	19-41	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	21	19-45	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	22	19-49	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	23	19-53	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	24	19-57	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	25	20-01	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	26	20-05	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	27	20-09	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	28	20-13	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	29	20-17	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	30	20-21	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear
"	31	20-25	60-4	SE	5-8	30.8	60.4	75.0	SE	10.0	Clear

NOTIFICATION OF INFECTIOUS DISEASE

The following is a list of the diseases notifiable in the City of London during 1901:

Adenoviruses Group	Androz
Epitheloid Neomastom	Anterior Echinostoma
Typhoid Fever	Carbuncular Fever
Plague	Cholera
Paratyphoid A and B	Cholera
Paratyphoid B	Contagious Fever
Polymorphous A and B	Diphtheria
Paratyphoid C	Erysipelas
Paratyphoid D	Kala-azar (Typhoid Fever)
Paratyphoid E	Kala-azar
Paratyphoid F	Kala-azar
Paratyphoid G	Kala-azar
Paratyphoid H	Kala-azar
Paratyphoid I	Kala-azar
Paratyphoid J	Kala-azar
Paratyphoid K	Kala-azar
Paratyphoid L	Kala-azar
Paratyphoid M	Kala-azar
Paratyphoid N	Kala-azar
Paratyphoid O	Kala-azar
Paratyphoid P	Kala-azar
Paratyphoid Q	Kala-azar
Paratyphoid R	Kala-azar
Paratyphoid S	Kala-azar
Paratyphoid T	Kala-azar
Paratyphoid U	Kala-azar
Paratyphoid V	Kala-azar
Paratyphoid W	Kala-azar
Paratyphoid X	Kala-azar
Paratyphoid Y	Kala-azar
Paratyphoid Z	Kala-azar

INFECTIOUS DISEASES

The number and monthly distribution of notifications received by the Medical Officer of Health during the past year were as follows:

Month	Number of Notifications
January	1,151
February	1,085
March	1,725
April	1,535
May	1,075
June	1,071
July	1,141
August	1,057
September	1,055
October	1,045
November	1,045
December	1,111
Total	15,450

The number of notifications received by the Medical Officer of Health during the past year were as follows:

NOTIFICATION OF INFECTIOUS DISEASE.

The following is a list of the diseases notifiable in the City of Liverpool during 1931 :—

Anthrax	Membranous Croup
Anterior Poliomyelitis	Ophthalmia Neonatorum
Cerebro-spinal Fever	Paratyphoid Fever
Cholera	Plague
*Chickenpox	Pneumonia, Acute Influenzal
Continued Fever	Pneumonia, Acute Primary
Diphtheria	Polioencephalitis, Acute
Dysentery	Puerperal Fever
Enteric (Typhoid) Fever	Puerperal Pyrexia
Erysipelas	Relapsing Fever
Encephalitis Lethargica, Acute	Scarlet Fever or Scarlatina
*German Measles	Smallpox
*Measles	Tuberculosis (all forms)
Malaria	Typhus Fever

The number and monthly distribution of notifications received by the Medical Officer of Health during the past year were as follows :—

	<u>1931.</u>
January	3,122
February	2,098
March	1,728
April	1,338
May	1,070
June	1,071
July	774
August	557
September	726
October	846
November	1,043
December	1,117
	<u>15,490</u>

* Measles and German Measles ceased to be compulsorily notifiable on 31st October, 1920. A system of voluntary notification has been adopted in regard to these diseases and Chickenpox.

The following table shows the number, monthly distribution, and nature of cases of infectious disease coming under the notice of the Medical Officer of Health during the year by notification of medical practitioners and in other ways.

	January	February	March	April	May	June	July	August	September	October	November	December	TOTALS	Removed to hospital
Smallpox.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Plague.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Enteric Fever.	2	...	2	5	7	3	4	6	3	4	1	...	37	32
Scarlet Fever.	128	112	90	97	133	103	76	94	106	179	137	152	1407	1213
Measles and German Measles.	2202	1705	1199	843	534	403	299	86	47	86	63	105	7572	948
Diphtheria	360	362	265	207	304	255	188	219	217	339	279	261	3256	3079
Puerperal Fever.	6	5	3	2	2	9	3	3	...	2	10	9	54	45
Puerperal Pyrexia	21	8	9	10	10	13	17	12	11	18	14	13	156	129
Erysipelas.	39	48	44	45	38	35	29	62	44	50	33	43	510	272
Cerebro-spinal Fever.	7	7	7	3	9	4	6	2	2	4	4	2	57	53
Poliomyelitis and Polioencephalitis	..	...	1	...	...	...	...	1	1	2	2	...	7	6
Ophthalmia Neonatorum.	47	55	59	49	84	52	76	63	57	74	42	60	718	43
Pneumonia & Influenzal Pneumonia.	648	202	162	174	249	138	104	97	162	195	354	486	2971	1181
Malaria.	7	6	6	4	7	17	5	16	5	11	7	7	98	72
Dysentery.	1	2	1	1	2	..	1	2	...	1	...	1	12	10
Encephalitis Lethargica.	4	1	5	2	6	...	4	3	2	5	2	1	35	22
Whooping Cough.	91	133	149	156	232	319	92	223	146	178	325	223	2267	435
Anthrax.	...	...	...	...	...	...	...	...	...	...	2	...	2	2
Chickenpox	128	78	98	112	187	193	127	60	93	190	176	126	1568	240
Totals	3691	2724	2100	1710	1804	1544	1031	949	896	1338	1451	1489	20727	7782

The number of patients removed to hospital includes those admitted to the general hospitals, as well as those admitted to the city infectious diseases hospitals.

The following table gives a summary of cases of infectious disease coming under the notice of the Medical Officer of Health during the last six years :—

DISEASE.	1926	1927	1928	1929	1930	1931
Smallpox	—	1	2	2	1	—
Plague	2	—	—	—	—	—
Typhus Fever	—	—	—	—	—	—
Enteric Fever	42	67	30	23	60	37
Scarlet Fever	2,244	1,640	2,193	3,989	3,069	1,407
Measles and German Measles	8,694	10,606	6,025	10,546	5,966	7,572
Diphtheria	1,519	1,664	1,902	2,336	4,023	3,256
Puerperal Fever.....	64	51	51	41	43	54
Erysipelas	567	611	623	711	720	510
Cerebro-spinal Fever	16	25	21	23	21	57
Poliomyelitis and Polioen- cephalitis	19	15	6	21	14	7
Ophthalmia Neonatorum ...	649	636	545	584	610	718
Anthrax	4	9	7	4	3	2
Encephalitis Lethargica	114	69	54	28	27	35
Whooping Cough	1,971	1,988	2,313	1,876	1,147	2,267
Malaria	56	64	77	63	125	98
Dysentery	8	8	4	8	27	12
Chickenpox	3,129	3,269	2,446	2,800	2,567	1,568

Table shewing the deaths from infectious disease occurring during the last six years :—

DISEASE.	1926	1927	1928	1929	1930	1931
Smallpox	—	—	—	—	—	—
Plague	1	—	—	—	—	—
Typhus Fever.....	—	—	—	—	—	—
Enteric Fever	6	10	4	8	1	6
Scarlet Fever	24	12	19	41	35	11
Measles and German Measles	221	345	177	427	170	369
Diphtheria	112	90	100	139	236	197
Influenza.....	141	268	99	408	75	345
Puerperal Fever.....	28	25	19	26	16	20
Erysipelas	30	24	22	34	24	27
Cerebro-spinal Fever	12	21	16	21	17	47
Poliomyelitis and Polioen- cephalitis	5	2	5	10	6	4
Anthrax	2	1	2	2	1	—
Encephalitis Lethargica	29	25	24	26	18	26
Whooping Cough	188	125	269	198	75	189
Malaria... ..	4	3	5	5	12	3
Dysentery	5	6	3	3	4	5
Chickenpox.....	5	3	3	8	3	1

TABLE SHOWING THE ANNUAL AVERAGE **NUMBER OF DEATHS** FROM THE PRINCIPAL ZYMOTIC DISEASES, DURING EACH OF THE SIX DECENNIAL PERIODS, 1866-1925, COMPARED WITH THE ACTUAL NUMBER OF DEATHS FOR THE YEAR 1931,

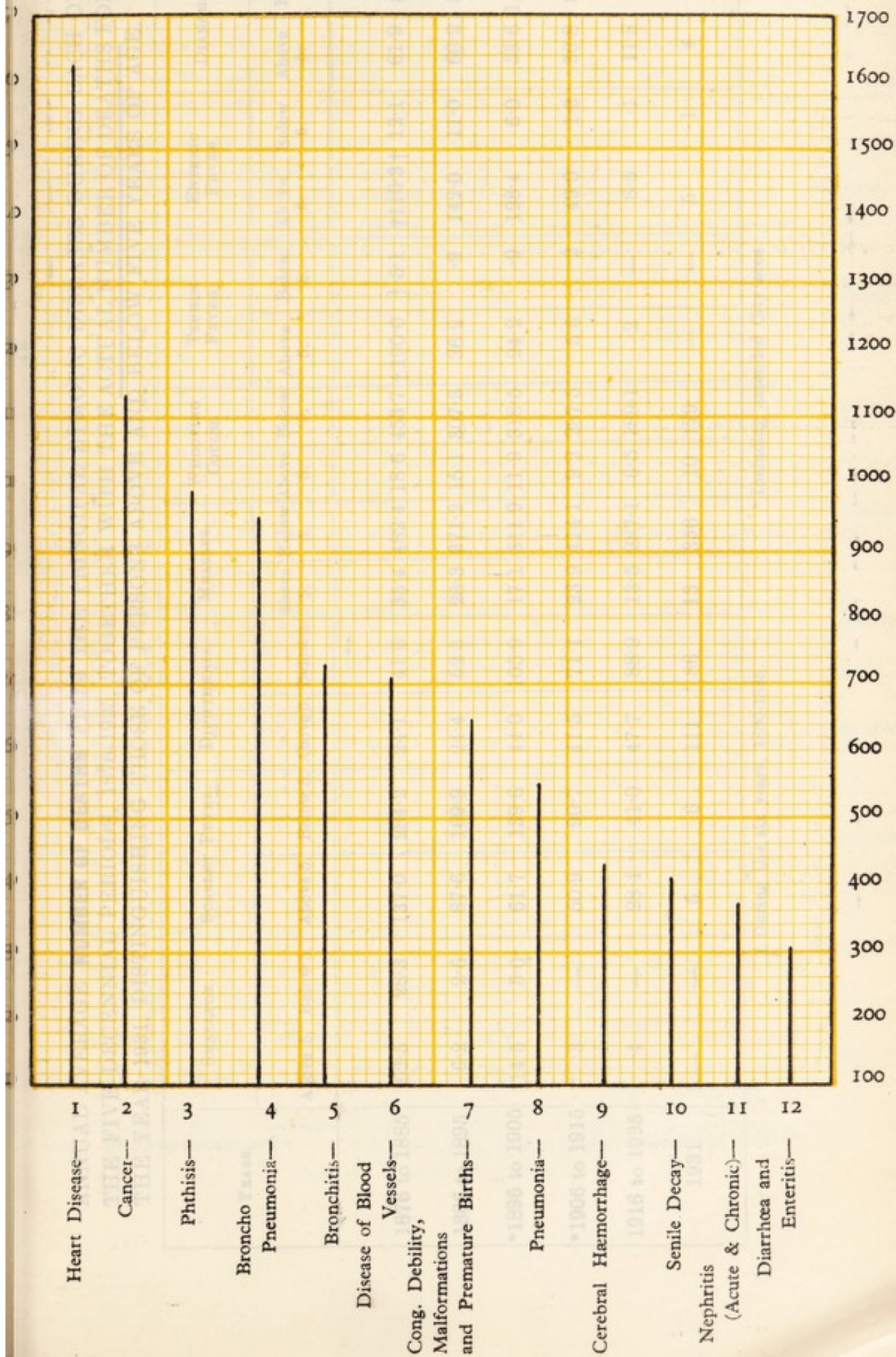
Years.	Smallpox.	Scarlet Fever.	Diphtheria.	Measles.	Whooping Cough.	Typhus Fever.	Enteric Fever.	Diarrhoea.
1866 to 1875	237.4	789.4	58.5	425.7	496.8	652.8	† —	995.3
1876 to 1885	90.8	421.2	65.7	517.8	472.3	238.0	126.4	658.4
1886 to 1895	8.8	257.5	76.7	399.5	322.4	37.1	153.0	600.6
*1896 to 1905	19.5	201.3	149.9	329.0	330.4	25.1	134.4	1,061.9
*1906 to 1915	0.3	141.6	112.6	438.0	296.7	5.7	50.3	848.0
1916 to 1925	0.4	69.4	136.6	300.6	195.6	0.2	8.6	254.4
1931	—	11	197	369	189	—	6	26

* Including extended City area.

† Records not available.

CITY OF LIVERPOOL.

COMPARATIVE VIEW OF TWELVE OF THE PRINCIPAL CAUSES OF DEATH
DURING THE YEAR 1931.



ANNUAL AVERAGE NUMBER OF DEATHS FROM THE PRINCIPAL ZYMOTIC DISEASES DURING EACH OF THE FIVE DECENNIAL PERIODS, 1876-1925, TOGETHER WITH THE ACTUAL NUMBER OF DEATHS FOR THE YEAR 1931, DISTINGUISHING THOSE OF PERSONS ABOVE AND BELOW FIVE YEARS OF AGE.

YEARS.	SMALLPOX.		SCARLET FEVER.		DIPHTHERIA.		MEASLES.		WHOPPING COUGH.		TYPHUS FEVER.		ENTERIC FEVER.		DIARRHŒA.	
	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.	Above 5.	Below 5.
1876 to 1885	62.5	28.3	137.0	284.2	24.1	41.6	35.4	482.4	18.6	453.7	+190.0	+5.1	+110.3†	12.1	61.9	596.5
1886 to 1895	6.2	2.6	87.6	169.9	24.4	52.3	28.3	371.2	15.1	307.3	36.2	.9	142.0	11.0	60.2	540.4
*1896 to 1905	14.5	5.0	61.7	139.6	44.0	105.9	17.1	311.9	11.9	318.5	24.2	.9	128.4	6.0	53.6	1,008.3
*1906 to 1915	.3	—	50.9	90.7	41.5	71.1	23.9	414.1	9.2	287.5	5.5	.2	49.0	1.3	30.8	817.2
1916 to 1925	.4	—	28.4	41.0	47.7	88.9	13.5	287.1	6.5	189.1	.2	—	8.5	.1	11.8	242.6
1931	—	—	5	6	111	86	13	356	10	179	—	—	5	1	4	22

† During the six years, 1880-1885.

* Including extended City area.

The following table shows the number of deaths, the annual average death rate per 100,000 of the population from the undermentioned forms of disease during the six decades, 1866 to 1925, and the year 1931 :—

DISEASE.		1866 to 1875.	1876 to 1885	1886† to 1895.	1896† to 1905.	1906† to 1915	1916 to 1925	1931
	Average Population	493,405.	538,651.	536,974.	691,351.	749,267.	814,014	856,311
Scarlet Fever	Total Deaths ...	7,894	4,212	2,575	2,013	1,416	694	
	Rate per 100,000 per annum.	159.9	78.1	47.9	29.1	19.0	8.5	
Typhus Fever	Total Deaths ...	6,528	2,380	371	251	57	2	
	Rate per 100,000 per annum.	132.2	44.1	6.9	3.6	0.8	0.2	
Enteric Fever	Total Deaths ...	*	1,264	1,530	1,344	503	86	
	Rate per 100,000 per annum.	—	21.5	28.4	19.3	6.7	1.5	
Measles	Total Deaths ...	4,257	5,178	3,995	3,290	4,380	3,006	3,111
	Rate per 100,000 per annum.	86.2	96.1	74.3	47.5	58.6	36.9	42.1
Whooping Cough	Total Deaths ...	4,968	4,723	3,224	3,304	2,967	1,956	1,111
	Rate per 100,000 per annum.	100.6	87.6	60.0	47.7	39.7	24.0	22.1
Smallpox	Total Deaths ...	2,374	908	88	195	3	4	
	Rate per 100,000 per annum.	48.1	16.8	1.6	2.8	0.4	0.5	
Diphtheria	Total Deaths ...	2,129	2,434	1,655	1,955	1,239	1,366	1,111
	Rate per 100,000 per annum.	42.4	45.7	30.8	28.2	16.5	16.9	22.1
Phthisis	Total Deaths ...	16,476	13,754	11,436	12,632	12,010	11,489	9,111
	Rate per 100,000 per annum.	333.9	255.3	212.9	182.7	160.7	141.1	115.1

† City Boundaries extended in 1895, 1902, 1905, 1913.

* Records not available.

INFECTIOUS SICKNESS.

Liverpool is closely associated with all parts of the world by reason of the large volume of shipping continually arriving in the port, and consequently the city is peculiarly liable to the importation of various forms of infectious disease. The measures which have been adopted have been successful in preventing any outbreaks of a serious nature obtaining a footing in the city.

The following table shows the number of cases of infectious disease notified during 1931, the case-rate per 1,000 of the population, the number of deaths registered from these diseases, the death rates per 100,000 of the population, and the percentage proportion of deaths to cases.

	Smallpox.	Enteric Fever.	Scarlet Fever.	Measles.	Diphtheria.	Puerperal Fever.	Erysipelas.	Cerebro-spinal Fever.	Poliomyelitis and Polioencephalitis.	Encephalitis Lethargica.	Malaria	Whooping Cough.
.....	—	37	1,407	7,572	3,256	54	510	57	7	35	98	2,267
Rate per 1,000 ...	—	0·04	1·64	8·84	3·80	2·9†	0·59	0·07	0·01	0·04	0·11	2·65
Deaths	—	6	11	369	197	20	27	47	4	26	3	189
Death rate per 100,000	—	0·7	1·2	43·1	23·0	107*	3·1	5·5	0·5	3·0	0·3	22·1
Percentage of Deaths to cases	—	16·2	0·78	4·9	6·0	37·0	5·3	82·5	57·1	34·9**	3·1	8·3

* Death rate per 100,000 Births.

† Case rate per 1,000 Births

** Based on 9 deaths of acute cases

PLAGUE.

No cases of plague occurred in the city during the year.

SMALLPOX.

There were no cases of smallpox reported to the Health Department during the year.

The following figures for England and Wales shew a gradual and remarkable spread during the years 1925 to 1931 of an exceedingly mild type of smallpox, only a few deaths occurring amongst the thousands of cases reported.

Year.			Cases.	Deaths.	
1925	...	...	5,365	...	9
1926	...	...	10,205	...	19
1927	...	...	14,769	...	49
1928	...	...	12,433	...	53
1929	...	...	10,975	...	39
1930	...	...	11,855	...	28
1931	...	...	5,665	...	9

(Extracted from the Registrar General's Quarterly Returns.)

A remarkable decline in the number of cases and deaths was shown during the year 1931. It may be appropriate to urge that the only safeguard against infection is vaccination and re-vaccination.

On account of its world-wide trade, Liverpool must always be one of the channels through which the severe types of smallpox may be imported. Furthermore, the constantly moving population—inwards and outwards—renders the city particularly liable to infection.

In Liverpool, however, the child population is relatively well vaccinated, as the most recent available figure for 1930 shows that approximately 71 per cent. of the children born in Liverpool have been successfully vaccinated. This is a higher percentage than in the previous year and is satisfactory when compared with the rest of the country, and reflects credit on the public vaccinators and others concerned in the administration of the Vaccination Acts.

The appended figures show the primary vaccinations during the last six years in the city of Liverpool :—

	1925.	1926.	1927.	1928.	1929.	1930.
—No. of Children born ...	19,592	19,792	19,020	19,120	19,145	19,183
—No. of primary vaccinations ...	13,976	14,091	15,572	13,736	13,368	13,711
—No. of Exemption Certificates granted ...	1,408	1,394	1,296	1,596	1,907	2,036
—No. of Certificates of insusceptibility sent ...	111	123	102	145	235	115

The following table shows the number of primary vaccinations carried out during the year in the four vaccination districts of the city :—

PRIMARY VACCINATIONS DURING THE YEAR 1930

District.	Sub-District.	No. of children born.	No. of primary vaccinations.	No. of exemptions granted.	No. of certificates of insusceptibility.	Percentage of children successfully vaccinated.
No. 1	Toxteth Pk. N.	1,657	1,061	197	10	64
	Toxteth Pk. S.	1,501	866	186	9	57
	Wavertree ...	1,130	767	210	20	67
	Woolton ...	71	61	7	—	86
No. 2	Abereromby ...	2,426	1,657	294	13	67
	Exchange ...	1,954	1,499	47	10	76
	Everton, S.E....	1,693	1,321	114	4	77
	Everton, N.W.	1,270	1,008	92	1	78
No. 3	Walton ...	2,422	1,728	267	22	71
	West Derby E.	1,357	974	222	7	71
	Fazakerley ...	1,202	871	199	5	72
	Edge Hill ...	1,312	913	121	8	69
No. 4	Kirkdale ...	1,188	985	83	6	83
	TOTAL ...	19,183	13,711	2,036	115	71
	Toxteth Park...	4,359	2,755	600	39	63
	Abereromby ...	7,343	5,485	544	28	74
	Walton ...	6,293	4,486	809	42	71
	Kirkdale ...	1,188	985	83	6	83
	TOTAL ...	19,183	13,711	2,036	115	71

TYPHUS FEVER.

No case occurred in Liverpool during 1931, and no indigenous cases have occurred in the city during the course of the past thirteen years.

ANTHRAX.

The importation of large amounts of animal products, which are handled in transit to stores or manufactories, has associated with it the risk of human infection with the anthrax bacillus, causing a condition known as malignant pustule or cutaneous anthrax.

It is of interest to note that, owing to the facilities now available, many workers, when they develop signs of suspected anthrax, avail themselves at once of these opportunities for prompt diagnosis.

During the year 1931, three cases of this disease were notified to the Health Department and admitted to Liverpool City Hospitals. Of these patients only two were associated with work in Liverpool, whilst one came from Preston.

The sites of the pustules were on an exposed part of the body. In two cases on the back of the neck and in the third case behind the ear.

The occupations followed were as follows:—One was a tallyman and checker at the dockside, associated with the discharge of ships, landing dry hides from South America. One was employed in a tannery, and had handled hides from various countries. He was engaged in dehairing hides in the lime yard. The other patient was a horse slaughterer, and was not aware that he had dealt with an infected animal. There were no deaths recorded.

During the year, 22 patients suffering from minor wounds, etc., incurred at the docks or in other circumstances where Anthrax infection was possible, or from boils, carbuncles, pustules, and the like, attended at the City Hospital, Fazakerley, for investigation. All were examined bacteriologically and were given appropriate treatment.

None proved to be Anthrax, though four were given a prophylactic injection of serum. It is the wish of the Health Authorities that cases or suspected cases of anthrax be sent without delay to this hospital for admission, when the necessary steps will be taken to diagnose the illness and place the patient under serum treatment.

The business firms connected with the hide and skin trade in Liverpool and neighbourhood have recognised the importance of the points above enumerated in regard to early diagnosis and serum treatment, and have conferred with the Liverpool Health Authorities with the object of taking further measures to educate the workers as to the risks involved in handling goods of animal origin, particularly hides and skins.

Posters have been printed on the subject and are affixed in suitable places. A pocket card has also been issued containing full information regarding the appearance and symptoms of cutaneous anthrax, and advice on the action to be taken. Arrangements are also made to admit all cases of anthrax or suspected anthrax direct to Fazakerley hospital.

Since the inception of the scheme in January, 1929, by which facilities for the immediate investigation of doubtful cases were offered, 117 such examinations have been made to the end of 1931. Six of these were genuine cases and received immediate treatment, thus saving time, so vital in the treatment of this disease.

Special arrangements have been made for the treatment of cases coming from districts outside Liverpool.

The question of the disinfection of hides and skins is still under consideration, but there are difficulties in evolving a method which will be successful, not only in destroying the anthrax spore without damaging the material, but one which can be utilised on a commercial scale.

TABLE GIVING PARTICULARS OF THE INCIDENCE OF ANTHRAX CASES IN THE UNITED KINGDOM, NOTIFIED TO THE CHIEF INSPECTOR OF FACTORIES, UNDER SECTION 73 OF THE FACTORY AND WORK-SHOP ACT, 1901.

ANTHRAX.	1930	1929	1928	1927	1926	1920	1910
Cases Notified ...	*43-(6)	40-(5)	45-(8)	31-(2)	38-(3)	48-(11)	51-(9)
Wool ...	13-(1)	16-(2)	14-(2)	18-(1)	15-(2)	25-(7)	28-(3)
Horsehair ...	1	3	4-(1)	3-(1)	8-(1)	5-(1)	6-(1)
Hides and Skins ...	24-(4)	20-(3)	24-(3)	9	12	17-(3)	14-(3)
Other Industries ...	5-(1)	1	8-(2)	1	3	1	3-(2)

Extracted from the Annual Report of the Chief Inspector of Factories for the year 1930.

*The principal figures relate to cases and the bracketed figures to deaths.

PSITTACOSIS.

No cases of this disease were reported in the city during the year. The following short account of the occurrence of this disease may be of interest.

The existence of acute illness in man due to the infection from sick parrots, or similar birds, has been recognised for a long time, and its frequent association with birds of the parrot tribe has caused the condition to be named "Psittacosis" (Lat. psittacus—parrot).

A considerable number of cases of this disease has occurred in England and Wales during the last few years. This disease is unfamiliar to the majority of medical practitioners, but nothing in the shape of an epidemic has been previously recorded. It is possible that a few unsuspected cases have occurred.

In July, 1929, and subsequent months, an outbreak of human cases of the disease occurred in the Argentine, and it was noticed that the cases were mostly associated with sick parrots presenting signs of nasal catarrh or diarrhœa. Enquiries showed that a large consignment of parrots had been imported into the Argentine from Brazil, and that there had been great mortality amongst them. Later, cases of illness in men occurred in various parts of the world, including Europe.

The first suspected human case in England occurred near Birmingham.

The onset of the disease is usually fairly acute, the symptoms being vague and consisting of malaise, feverishness, headache and chilliness. The lungs were involved in almost every case.

Liverpool had only six human cases, five of which were resident in one institution in the city. The cases were reported in January, 1930, some of them being severe and requiring hospital treatment: all recovered. With one exception all the Liverpool cases were associated with the handling of a green Amazon parrot which died.

Of the total cases (117) reported on by the Ministry of Health, and occurring in this country, 25 were fatal, giving a case mortality rate of 21·3 per cent.

The occurrence of these cases throughout the country resulted in the Ministry of Health prohibiting the importation of birds of the parrot species under the Parrots (Prohibition of Import) Regulations, 1930.

It would appear desirable that birds of this character should not be kissed or caressed or fed from the mouth owing to the grave danger of transmitting disease.

Prompt enquiries were made into all cases by the staff of the department, and there was no extension of the outbreak.

ENTERIC FEVER.

The decline in the prevalence of this disease which has been continuous for the past 35 years has now almost led to its extinction. The death rate has fallen since 1894 from 46 to 0·7 per 100,000.

Forty-one cases of enteric fever (including 26 cases of paratyphoid B.) were reported during 1931 in the city and port of Liverpool. Of these, 5 were imported from overseas, leaving 36 of indigenous origin, as against 60 in the preceding year. Of the cases from shipboard, two were from West Africa, one from Canada, one from South America, and one from a coastwise steamer. One case followed the consumption

of shellfish, namely, cockles from Formby. Four persons were infected whilst away on holidays or otherwise.

Of the cases of enteric fever reported in the past seven years 35 per cent. have been due to infection with the *Bacillus paratyphosus* B.

The result of inquiry into the probable causation of the reported cases is shown in the following table, the figures for the years 1926 to 1931 being shown for the purpose of comparison:—

CITY AND PORT OF LIVERPOOL. ENTERIC FEVER, 1926-31.

	CASES.						PERCENTAGE.					
	1926.	1927.	1928.	1929.	1930.	1931.	1926.	1927.	1928.	1929.	1930.	1931.
Imported by sea ...	12	14	11	5	5	5	24.0	17.5	27.5	17.9	7.9	12.0
Imported by land ...	3	2	4	8	4	4	6.0	2.5	10.0	28.6	6.1	9.0
Shell-fish ...	1	6	2	—	—	1	2.0	7.5	5.0	—	—	2.0
Direct infection ...	7	11	3	—	3	4	14.0	13.7	7.5	—	4.6	9.0
Direct infection from missed cases ...	1	4	1	—	1	—	2.0	5.0	2.5	—	1.5	—
Chronic carrier ...	—	1	—	1	—	—	—	1.2	—	3.5	—	—
Total in which source was ascertained ...	24	38	21	14	13	14	48.0	47.5	52.5	50.0	20.0	34.0
Central area ...	7	17	6	4	12	6	14.0	21.2	15.5	14.3	18.4	14.0
Outer area ...	19	25	13	10	40	21	38.0	31.2	32.5	35.7	61.5	51.0
Total in which sources were not ascertained	26	42	19	14	52	27	52.0	52.5	47.5	50.0	79.9	65.0
Total for city and port	50	80	40	28	65	41						
Infection due to B. Typhosus ...	37	60	34	20	28	12	74.0	75.0	85.0	71.4	43.1	29.0
B. Paratyphosus B ...	12	19	4	7	36	26	24.0	23.8	10.0	25.0	55.4	63.0
B. Paratyphosus A ...	1	1	2	—	—	2	2.0	1.2	5.0	—	—	4.0
Type not ascertained	—	—	—	1	1	1	—	—	—	3.6	1.5	2.0

UNDULANT FEVER.

A case of Undulant Fever was removed to the City Hospital, Fazakerley, in April from Garston district. The patient, a woman aged 27 years, had partaken of cows' milk from several sources and it was not possible to trace the infection to its origin.

DIPHTHERIA.

During 1931 3,256 cases of Diphtheria were reported, giving an attack rate of 3·8 per 1,000 of the population. Of these cases 197 proved fatal, making a fatality rate of 6·0 per 100 cases, and a mortality rate of 23·0 per 100,000 population. Although the case-rate shows a considerable increase over the average of the past ten years, the fatality rate remains low and but slightly above that recorded in 1930.

Table 1.

DIPHTHERIA IN THE CITY OF LIVERPOOL, 1921-1931

	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930	1931.
Cases	1,182	953	993	1,105	1,504	1,519	1,664	1,902	2,336	4,023	3,256
Deaths	97	91	87	71	106	112	90	100	139	236	197
Case rate per 1,000 population ...	1·4	1·2	1·2	1·3	1·8	1·79	1·94	2·20	2·68	4·57	3·8
Death rate per 100,000 population	12·0	11·5	10·5	8·5	12·6	13·2	10·5	11·5	15·9	26·8	23·0
Fatality rate per 100 cases	8·2	9·5	8·8	6·4	7·0	7·4	5·4	5·3	5·9	5·9	6·0

The accompanying graphs show the great decline in the mortality of this disease during the period for which records for the City of Liverpool exist. Prior to 1857 there were no records of the deaths from diphtheria, the heading croup presumably containing all the deaths from this disease; from 1858 onwards the term diphtheria has steadily replaced croup as a certified cause of death, and the first graph accordingly gives the combined death rates from these two headings.

It will be observed that prior to 1890 severe epidemics of diphtheria occurred at intervals of four to seven years.

In 1890 diphtheria and membranous croup were made notifiable.

In 1895 treatment by anti-toxin was introduced during a rising wave of prevalence of diphtheria, and the fatality rate fell steadily from 1896 onwards till 1913, as the value of this method of treatment became more recognised. A severe outbreak occurred during the years 1917-1920, and occasioned a set-back in the decline of mortality, but the decline in fatality has continued since those years. The length of time elapsing between one epidemic and the next has been increased, and the height of the epidemic wave also greatly diminished.

The high prevalence of diphtheria that began in 1929, following a very dry summer, and which reached its maximum in 1930, continued during 1931.

The type of disease was on the whole severe. Paralysis was frequent and often occurred late in the course of the illness. The average duration of stay in hospital was about seven weeks. The incidence in affected institutions tended to be heavy. There can be little doubt that had it not been for the very skilled treatment received the mortality would have been heavier than was actually recorded. In 1918 the fatality rate was 17.5 per 100 cases; in 1931 it was 6.0.

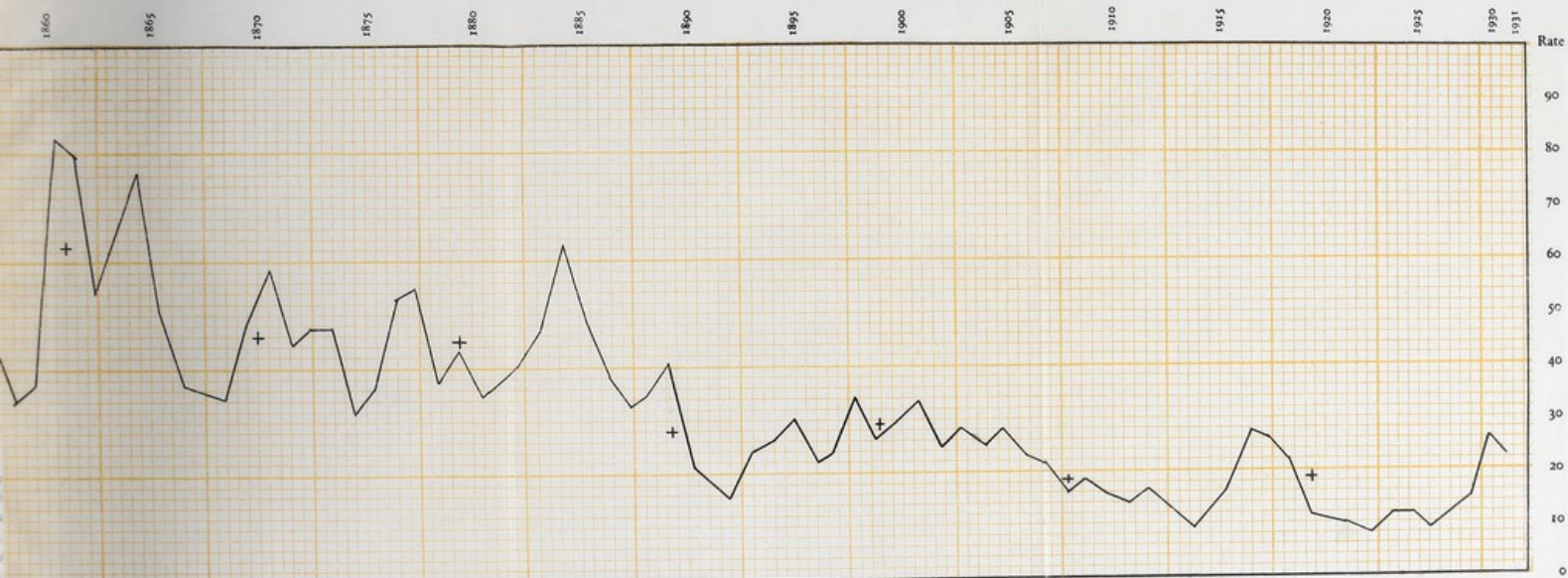
The districts of West Derby and Woolton continued, as in 1930, to be heavily infected.

Despite the heavy incidence upon the city, the orphanages and similar institutions have remained remarkably free from diphtheria. There can be no doubt that this is mainly due to the immunisation of the children. Thus of the three largest orphanages in the city, in two the children have been systematically immunised against diphtheria since 1926, and in a third immunisation was effected in 1929, and in none of these did a single case of diphtheria occur among more than 1,000 children.

Outbreaks of diphtheria occurred in two resident schools under the Education Committee. In both cases the resident children were swabbed for the detection of carriers, the children were then Schick-tested and the susceptible children were inoculated. In school "W" four cases occurred in June; four carriers were found and excluded and inoculation carried out with toxin-antitoxin floccules. No further cases occurred.

CITY OF LIVERPOOL.

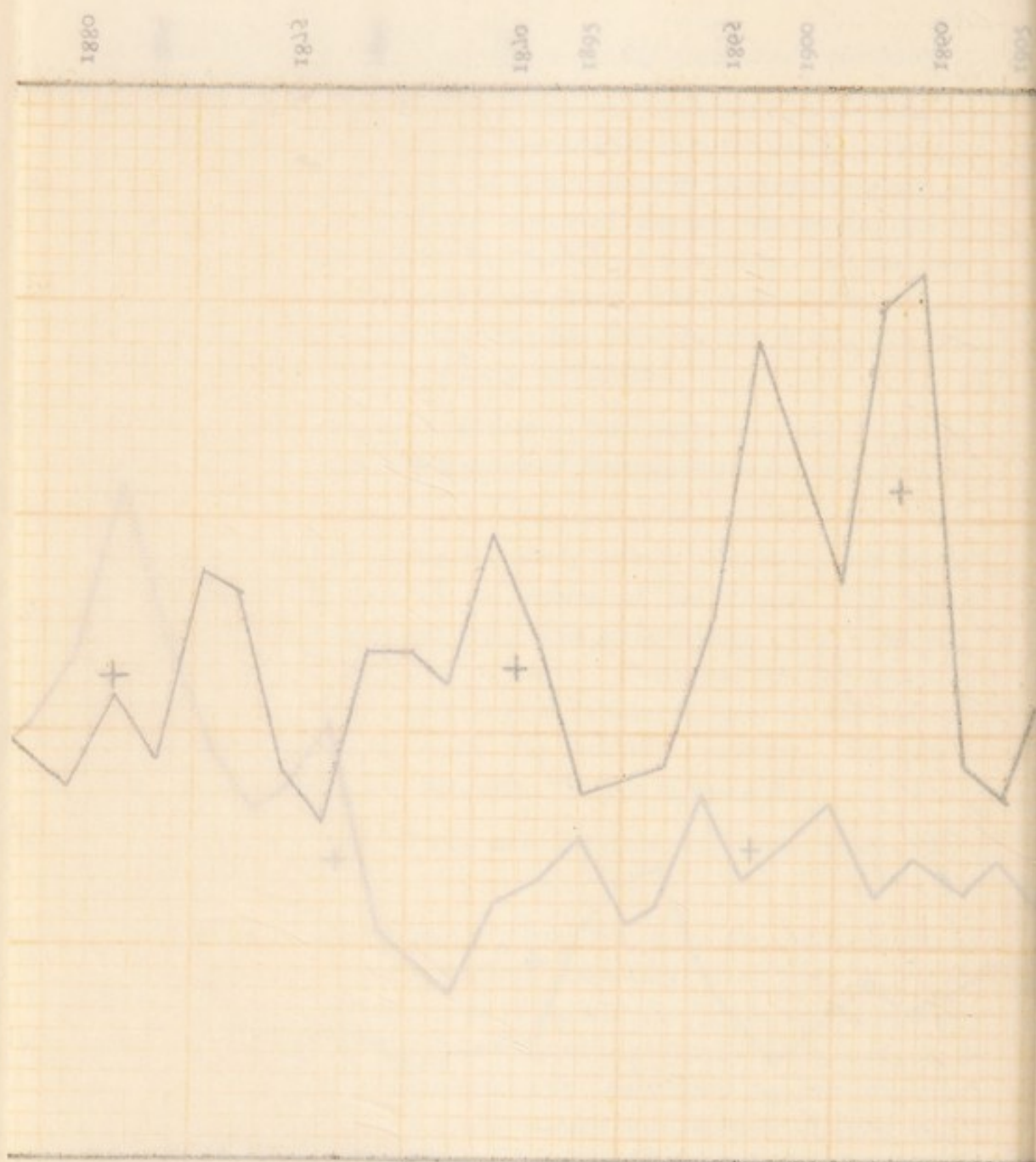
DEATH-RATE FROM DIPHTHERIA (INCLUDING CROUP) PER 100,000 POPULATION 1858-1931.



The crosses indicate the average mortality of the decade centred round the cross; a line joining the crosses indicates the descending trend of mortality from this disease.

CITY OF LIVERPOOL.

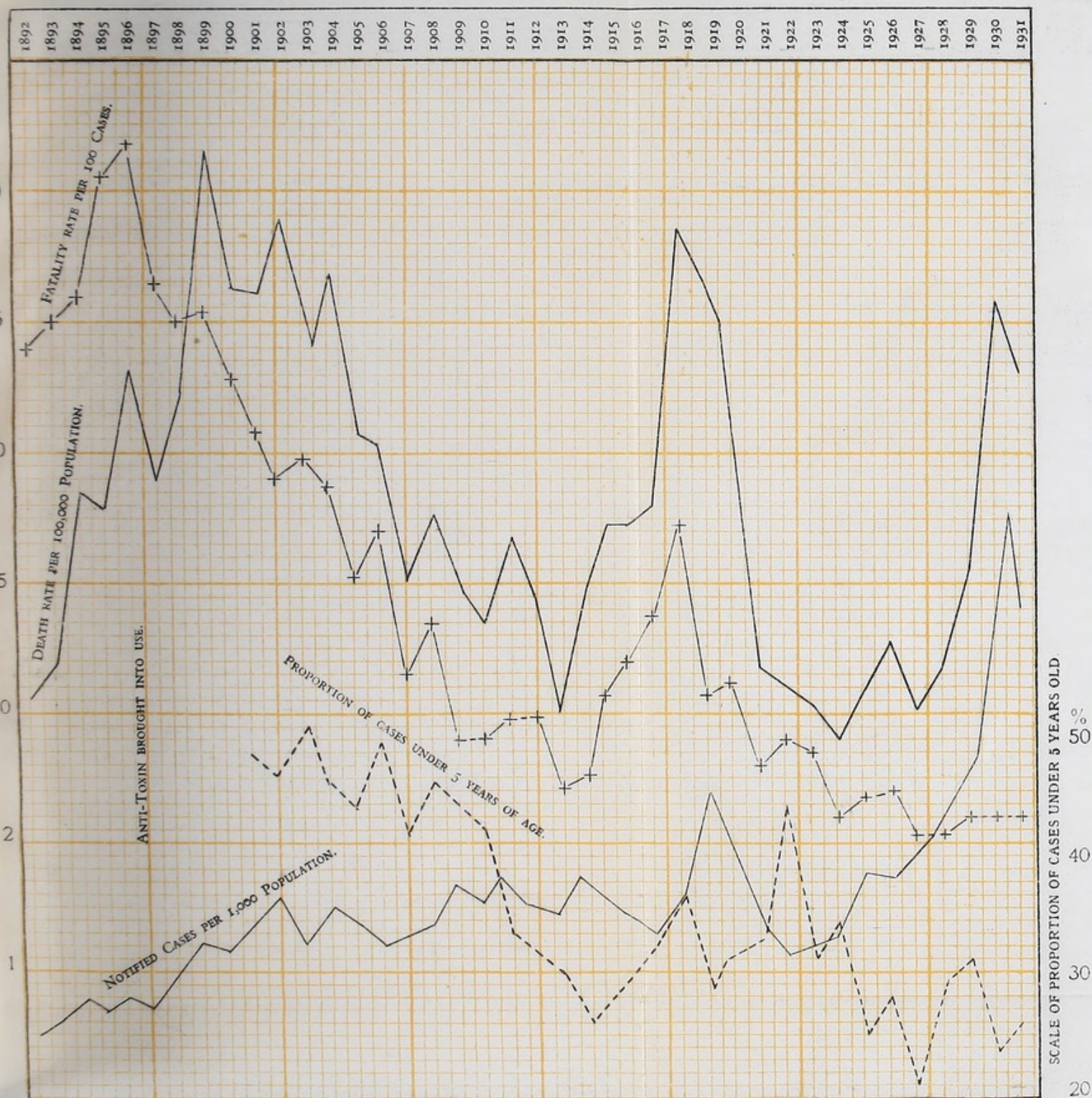
DEATH RATE (FROM ALL CAUSES EXCEPT SMALLPOX) PER 100,000 POPULATION 1881-1905



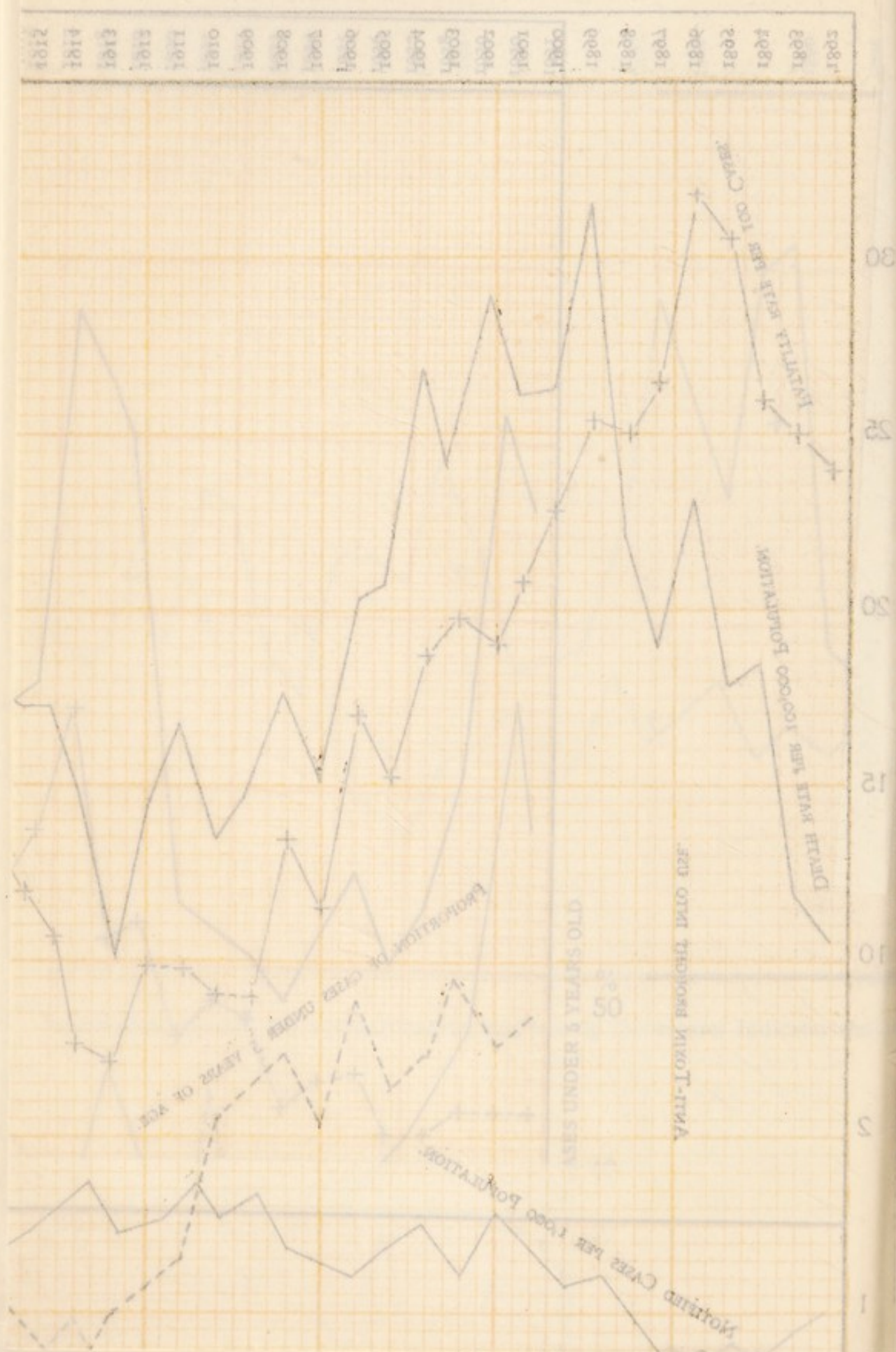
The crosses indicate the average mortality of the city.

DIPHTHERIA & MEMBRANOUS CROUP IN CITY OF LIVERPOOL DURING 1892-1931.

DEATH RATE PER 100,000 POPULATION, NOTIFIED CASES PER 1,000 POPULATION, FATALITY RATE PER 100 CASES NOTIFIED, AND PROPORTION OF CASES UNDER 5 YEARS OF AGE TO TOTAL CASES.



DEATH RATE PER 100,000 POPULATION, NOTIFIED CASES PER 1,000
CASES NOTIFIED, AND PROPORTION OF CASES UNDER 5 YEARS



In school "D.D." four cases occurred in February. The children were inoculated with three doses of toxoid, one case occurring before the inoculation was completed. The school remained free from diphtheria till October when a further batch of eight cases and carriers occurred following the introduction of new children into the school who had not been inoculated. A number of carriers were found and a day child attending the school was found to be suffering from nasal diphtheria. A re-test of the children was carried out and all those that were Schick-positive were inoculated with one dose of toxin-antitoxin floccules and two doses of toxoid. One further case occurred in December, but no cases have occurred in 1932. It was noted that the cases occurring in the second outbreak were very mild and the symptoms atypical.

Several outbreaks occurred in schools. Numerous visits were made to these, and 984 children's throats were swabbed for the detection of carriers; of these 45, or 4.5 per cent., were positive. In all such cases the parents were informed and arrangements made for the medical care and isolation of the child. These measures were effectual in reducing the incidence of the illness in most cases.

Since 1920 observations have been made to determine with greater exactitude facts of the distribution of these diseases in the different parts of the city; for this purpose the city was divided into three zones:—(I.) Central, comprising Exchange and Abercromby; (II.) Middle, comprising Everton, Kirkdale, Edge Hill, Toxteth and Walton, and (III.) Outer, comprising the suburban areas of West Derby East, Wavertree, Fazakerley and Woolton. Examination of Table 2 shows the following points:—

(1) The incidence or case-rate is persistently higher in the outer than in the middle or central parts of the city. This is almost certainly due to a larger proportion of cases of a mild character receiving adequate medical attention in the outer districts. In other words a low case-rate, in this case, indicates incomplete notification of the disease. It is probable that the increase of the case-rate affecting the whole of the city during the past 40 years is due to similar causes.

(2) The death rate has, on the whole, been highest in the central districts during the eight years 1921-28, but was highest in the middle districts in 1929, and in 1930 was slightly higher in the outer than in the middle districts, and in 1931 the outer districts were still the most affected.

Table 2.
DIPHTHERIA, YEAR 1931.

District.	Estimated Population, 1931.	Cases.	Deaths.	Attack Rate per 1,000 population.	Death Rate per 100,000 population.	Case Fatality Rate %.	Percentage Proportion of Secondary to Primary Cases.	Percentage Proportion of Children 0-2 years to Total Cases.	Percentage Proportion of Children 0-5 years to Total Cases.
1. Exchange	75,320	149	14	2.0	18.6	9.4	5.1	8.7	45.0
2. Abercromby	42,266	161	12	3.8	28.4	7.5	8.2	10.5	35.4
3. Everton	111,037	418	16	3.7	14.4	3.8	9.7	7.2	28.2
4. Kirkdale	64,306	191	7	2.9	10.8	3.6	6.5	5.8	24.6
5. Edge Hill	81,757	253	20	3.1	24.4	7.9	6.2	8.7	37.5
6. Toxteth	135,099	354	31	2.6	22.9	8.7	8.7	10.5	28.8
7. Walton.....	89,588	367	24	4.1	26.8	6.5	8.3	4.1	20.4
8. West Derby	100,441	571	29	5.7	28.9	5.1	10.0	2.6	17.9
9. Wavertree	98,522	444	28	4.5	28.4	6.3	8.6	3.4	21.6
10. Fazakerley	51,459	295	13	5.7	25.3	4.4	4.6	3.7	27.8
11. Woolton	6,688	53	3	7.9	44.9	5.7	16.1	—	11.3
Central Districts (1 to 2) ...	117,586	310	26	2.63	22.1	8.4	6.6	9.7	40.0
Middle Districts (3 to 7) ...	481,787	1,583	98	3.28	20.3	6.2	7.8	7.2	27.6
Outer Districts (8 to 11) ...	257,110	1,363	73	5.31	28.4	5.4	9.3	3.0	21.0
Whole City	856,483	3,256	197	3.80	23.0	6.0	16.9	5.7	26.0

Table 3.

CITY OF LIVERPOOL.—DIPHTHERIA, 1927-31.

Districts	Case Rates per 1,000 population.					Death Rates per 100,000 population.					Fatality Rates.				
	1927	1928	1929	1930	1931	1927	1928	1929	1930	1931	1927	1928	1929	1930	1931
Central (1-2)	1.57	1.92	2.12	2.70	2.63	14.2	11.8	13.3	14.7	22.1	8.9	4.3	6.2	5.4	8.4
Middle (3-7)	1.90	2.09	2.40	2.32	3.28	12.0	10.9	16.9	38.4	20.3	6.3	5.2	7.0	6.0	6.2
Outer (8-12)	2.23	2.50	3.53	7.07	5.31	5.4	12.5	15.2	40.7	28.4	2.5	5.0	4.3	5.7	5.4
Whole City	1.94	2.20	2.68	4.57	3.80	10.5	10.4	15.9	26.8	23.0	5.4	5.27	5.95	5.9	6.0

Districts	Percentage Proportion of Secondary to Primary Cases.					Percentage Proportion of Children 0-2 years old to Total cases.					Percentage Proportion of Children 0-5 years old to Total cases.				
	1927	1928	1929	1930	1931	1927	1928	1929	1930	1931	1927	1928	1929	1930	1931
Central (1-2)	6.3	2.1	3.9	3.5	6.6	13.4	6.1	5.5	7.6	9.7	25.4	33.0	38.9	33.3	40.0
Middle (3-7)	5.5	6.5	8.0	7.9	7.8	6.7	5.2	6.2	4.1	7.2	19.2	33.6	33.6	25.0	27.6
Outer (8-12)	9.3	10.4	10.1	14.1	9.3	5.7	4.3	4.0	2.4	3.0	14.6	19.2	20.2	19.5	21.0
Whole City	9.9	10.4	14.6	14.1	16.9	7.2	5.0	5.6	3.6	5.7	18.5	29.0	30.7	23.3	26.0

(3) The fatality rates are persistently higher in the central and the middle than in the outer districts. Formerly the fatality rates in the central districts were somewhat higher than in the middle districts, but latterly this has been reversed.

(4) This higher rate of fatality coincides with the age distribution of the cases in the three zones. The proportion of children under two years and under five years (the ages when the disease is especially fatal) is also, on the whole, higher in the central than in the middle, and in the middle than in the outer zone. The variations in case rates and in the proportion of young children are sufficient to account for the variations in fatality.

(5) The proportion of secondary to primary cases—that is the proportion of second and further cases in a house to first cases—at first showed on the average little difference between the zones, but during the last five years it was markedly highest in the outer districts and least in the central districts.

(6) The proportion of secondary to primary cases has increased since 1921, the proportion rising from 5.9 to 16.9 per cent; this probably indicates the growth of a non-immune population since the severe outbreak of 1914-1920, and foretold the onset of the epidemic wave which began in the last quarter of 1929. The continued high ratio of secondary cases since 1929 appears to be associated with the prevalence of a severe type of diphtheria.

(7) In the central part of the city diphtheria is acquired at an earlier average age than in the outer zone. The earlier age at infection results in a higher proportion of deaths, and so in a raised death rate in the central area. The lower proportion of cases notified in the central zone is probably dependent upon the failure to obtain medical assistance in the milder types of cases.

Table 4.
DEATHS FROM DIPHTHERIA.

DISTRICTS.	QUARTERS.								YEAR 1931		
	March.		June.		Sept.		Dec.		M.	F.	Total.
	M.	F.	M.	F.	M.	F.	M.	F.			
Exchange	3	3	...	1	1	2	2	2	6	8	14
Abercromby	...	1	3	1	1	3	2	1	6	6	12
Everton	2	2	3	1	1	2	3	2	9	7	16
Kirkdale	...	1	...	3	1	1	1	...	2	5	7
Edge Hill	4	3	5	3	1	4	...	...	10	10	20
Toxteth	5	8	2	6	1	4	4	1	12	19	31
Walton	2	6	2	2	3	4	4	1	11	13	24
West Derby	2	11	1	4	1	1	5	4	9	20	29
Wavertree	5	6	6	2	4	2	1	2	16	12	28
Fazakerley	...	2	2	2	2	...	3	2	7	6	13
Woolton.....	...	1	...	1	...	...	...	1	...	3	3
City.....	23	44	24	26	16	23	25	16	88	109	197

AGES AT DEATH.

Under 1 year.	1—	2—	3—	4—	5—	10—	15—	20—	30—	40—	50—	60—	All Ages.
12	18	15	18	23	77	27	2	3	...	...	...	2	197

AGES OF NOTIFIED CASES.

56	130	181	226	254	1352	549	205	206	61	23	9	4	3256
67.5%						32.5%							

PERCENTAGE FATALITY AT EACH AGE.

21.0	13.8	8.3	8.0	9.0	5.7	4.9	1.0	1.4	...	...	...	50.0	6.0
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N.B.—Deaths in public institutions are transferred to the districts from which the patients came.

PREVENTIVE MEASURES.—The most effectual method of preventing mortality from diphtheria in the past has been the removal of such cases to hospital; the great reduction in the fatality from the disease, which has fallen from 32·6 per cent. of the notified cases in 1891, to 6·0 per cent. in 1931, is due mainly to the administration of anti-toxin promptly and in adequate amount; 94 per cent. of the notified cases were removed to hospital for treatment during 1931.

Recently, by the Schick test, it has become possible to distinguish between those who are and those who are not liable to attack; those susceptible can be immunised in a high proportion of cases by three subcutaneous injections of toxoid or of toxoid-antitoxin, and this has been carried out in a number of institutions during the year. In the case of children under 6 or 7 years of age the proportion of susceptibles is so high that the preliminary Schick test can be dispensed with and the three immunising injections given at once.

This method of immunisation has been used by the Liverpool Public Health Department during the past seven years. Up to December 31st, 1930, 444 children had been inoculated without testing, and of 1,028 persons tested 476 (46 per cent.) had been found susceptible and immunised. A total of 920 persons had been inoculated without any ill effects beyond, in a few cases mainly amongst adults, a transient soreness of the arm. In addition, the nurses at the city hospitals have been tested, and those found susceptible immunised, for several years. A number of children admitted to hospital with scarlet fever have also been immunised against diphtheria.

A much wider field, however, is open for this method of prevention. The risk of dying from diphtheria is much greater during the first few years of life than in subsequent years. It was with this purpose and following on a report of the medical officer of health that authority was given by the Health Committee in 1926 to issue supplies of diphtheria (and also scarlet fever) prophylactics for medical

practitioners and to give assistance in testing older children as to susceptibility to diphtheria and scarlet fever at the request of a medical practitioner.

To further this end a weekly inoculation clinic was started at the Carnegie Welfare Centre towards the end of the year 1930. Up to December 31st, 1931, about 450 children have been inoculated against diphtheria; the large majority of these were also inoculated against scarlet fever.

The following table shows the numbers inoculated mainly with toxoid during 1931 with material supplied by the Health Department.

Table 5.

DIPHTHERIA IMMUNISATION.

Number of persons tested and inoculated with material supplied by the Health Committee.

	Shick Positive.	Shick Negative.	Fully Inoculated.	Partially Inoculated.
Public Health Department	89	149	221	—
Carnegie Welfare Centre	50	33	362	18
Schools	100	50	165	—
City Hospitals :—				
Fazakerley	—	—	493	—
City Hospital East	28	2	28	—
City Hospital South	8	13	29	—
Alder Hey Hospital	70	34	62	—
Medical Practitioners	—	—	203	2
TOTALS	345	281	1,563	20
	626		1,583	

SCARLET FEVER.

Scarlet Fever has shown a steady decline in mortality during the past 60 years. The number of cases has shown a reduction since 1902; following upon a serious epidemic in 1929-30, the number of cases notified in 1931, namely, 1,407, was very small in comparison with earlier years the attack rate per 1,000 population being 1·6.

The fatality rate (or proportion of deaths to cases) has shown a very marked reduction, being in 1931 only 0·78 per cent., as against 19·2 in the year 1889. The death rate from scarlet fever was 1·2 per 100,000 inhabitants, the lowest yet recorded in the city. The decline in the mortality of scarlet fever is well shown in the attached diagram.

The low mortality is due to the small proportion of deaths to notified cases (fatality rate). In this reduction of fatality the more extended use of scarlatinal anti-toxic serum has played a part. The importance of scarlet fever, however, arises not only from the deaths but from the cases of heart, kidney and middle-ear disease which it occasions.

The following table shows the fatality and mortality from scarlet fever during the past 11 years.

Table 1.
SCARLET FEVER IN THE CITY OF LIVERPOOL, 1921-1931.

	1921.	1922.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.
Cases	3,062	2,419	2,307	3,790	3,561	2,244	1,640	2,193	3,989	3,069	1,407
Deaths	45	39	43	63	93	24	12	19	41	35	11
Case-rate per 1,000 inhabitants ...	3·7	2·9	2·8	4·5	4·2	2·6	1·9	2·5	4·57	3·49	1·64
Death-rate per 100,000 inhabitants ...	5·5	4·7	5·2	7·4	11·0	2·8	1·4	2·2	4·7	4·0	1·2
Fatality rate per 100 cases	1·5	1·6	1·8	1·7	2·6	1·1	0·7	0·87	1·02	1·14	0·78

Table 2.
SCARLET FEVER, 1931.

District.	Estimated Population, 1931.	Cases.	Deaths.	Attack Rate per 1,000. population	Death Rate per 100,000. population	Case Fatality Rate %.	Percentage.		
							Proportion of Secondary to Primary Cases.	Proportion of Children 0-2 years to Total Cases.	Proportion of Children 0-5 years to Total Cases.
1. Exchange	75,320	99	...	1.3	...	...	5.5	8.1	39.4
2. Abereromby	42,266	43	...	1.0	...	...	2.2	7.0	46.5
3. Everton	111,037	182	3	1.6	2.7	1.6	5.6	9.9	34.1
4. Kirkdale	64,306	126	1	1.9	1.5	0.8	5.3	7.1	25.4
5. Edge Hill	81,757	95	...	1.1	...	...	3.5	5.3	29.5
6. Toxteth	135,099	148	3	1.1	2.2	2.0	13.5	8.8	30.4
7. Walton	89,588	160	1	1.8	1.1	0.6	10.8	3.1	21.2
8. West Derby East	100,441	230	1	2.3	1.0	0.4	13.0	3.0	21.3
9. Wavertree	98,522	170	2	1.7	2.0	1.2	6.8	4.1	26.5
10. Fazakerley	51,459	151	...	2.9	...	...	30.9	5.3	29.1
11. Woolton	6,688	3	...	0.4	...	...	...	...	33.3
Central Districts (1 to 2)	117,586	142	...	1.20	...	...	4.3	7.7	41.5
Middle Districts (3 to 7)	481,787	711	8	1.47	1.6	1.1	8.0	7.0	28.3
Outer Districts (8 to 11)	257,110	554	3	2.16	1.2	0.5	13.0	4.1	25.1
Whole City	856,483	1,407	11	1.6	1.2	0.8	12.2	6.0	28.4

Since 1922 figures relating to scarlet fever have been compiled for each of the registration districts as is shown in table 2. Although some alteration in the boundaries of these districts has occurred, they are substantially the same, except that Garston has been included in Wavertree, Sefton Park in Toxteth, and the Norris Green area (formerly West Derby Rural District) is now included in Fazakerley and West Derby. For purposes of comparison the existing 11 registration districts have been grouped into three zones of fairly comparable character:—(i) Central zone, including Exchange and Abercromby; (ii) Middle zone, including Everton, Kirkdale, Edge Hill, Toxteth and Walton, and (iii) Outer zone, including Fazakerley, West Derby, Wavertree and Woolton.

The figures for each of these zones for the years 1926 to 1931 are shown in table 3. The following inferences may be drawn:—

(1) The death rates are, with the exception of 1930 and 1931, uniformly higher in the central than in the middle, and in the middle than in the outer zone. Mortality decreases from the centre outwards.

(2) This raised mortality in the centre is due not to a higher recorded incidence of scarlet fever, but to a higher proportion of deaths per 100 cases (fatality) in the central than in the middle, and in the middle than the outer zone. In the outer zone, having a population of almost a quarter of a million persons, among 554 cases of scarlet fever only three deaths occurred, a fatality of 0.54 per cent.

(3) Reference to table 4 will show that the highest fatality is experienced in the first year of life, and that after five years of age deaths are very rare. From table 3 it will be seen that there is uniformly a higher proportion of cases under two years in the centre of the city, and that there is usually a higher proportion of cases under five years in the central zone—1929 being exceptional in this respect. The cause of the higher mortality in the centre of the city is, then, the younger average age at which children are there attacked.

(4) The case rate is usually highest in the outer zone and lowest in the central zone, the figures for the middle zone being intermediate. In this respect, again, 1929 was exceptional. The inference from this lower rate of notified cases is that, in the poorer parts of the city, a considerable number of cases of scarlet fever escape notification, probably because in the milder cases medical advice is not sought.

(5) The proportion of secondary to primary cases in a house shows no constant variation between one district and another, but varies considerably between different years. It rises in, and immediately before, epidemic years.

Table 3.

CITY OF LIVERPOOL.—SCARLET FEVER, 1926-1931.

Districts.	Case Rates per 1,000 population.						Death Rates per 100,000 population.						Fatality Rates per 100 cases.					
	1926	1927	1928	1929	1930	1931	1926	1927	1928	1929	1930	1931	1926	1927	1928	1929	1930	1931
Central (1-2)	2.3	0.95	1.74	4.22	2.29	1.20	3.8	1.56	3.14	7.79	1.16	...	1.6	1.7	1.8	1.8	2.0	...
Middle (3-7)	2.5	1.91	2.49	4.66	3.32	1.47	3.4	1.42	1.71	4.59	4.36	1.6	1.4	0.7	0.7	1.0	1.3	1.1
Outer (8-11)	3.2	2.45	2.97	3.28	4.47	2.16	0.9	1.26	2.57	3.28	2.95	1.2	0.3	0.5	0.8	0.7	0.6	0.5
Whole City	2.7	1.92	2.53	4.57	3.49	1.6	2.6	1.40	2.19	4.71	4.0	1.2	1.1	0.7	0.9	1.02	1.14	0.8
Districts.	Percentage Proportion of Secondary to Primary Cases.						Percentage Proportion of Children 0-2 years old to Total Cases.						Percentage Proportion of Children 0-5 years old to Total Cases.					
	1926	1927	1928	1929	1930	1931	1926	1927	1928	1929	1930	1931	1926	1927	1928	1929	1930	1931
Central (1-2)	15.1	3.7	7.8	14.1	9.0	4.3	9.1	8.6	5.5	4.4	12.1	7.7	39.8	23.1	31.0	25.4	42.8	41.5
Middle (3-7)	10.0	10.2	9.16	11.9	9.4	8.0	6.0	5.9	4.2	2.8	4.5	7.0	34.5	28.5	31.2	27.9	28.9	28.3
Outer (8-11)	11.7	12.6	19.8	13.7	8.5	13.0	5.0	3.4	3.1	3.2	2.6	4.1	28.3	20.9	25.8	31.8	26.4	25.1
Whole City	13.7	12.3	17.5	17.4	9.0	12.2	6.2	5.2	3.9	3.1	4.6	6.0	32.1	25.4	29.2	28.7	29.2	28.4

Table 4.
DEATHS FROM SCARLET FEVER.

DISTRICTS.	QUARTERS.								YEAR.		
	March.		June.		Sept.		Dec.		1931.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Total.
Exchange	...	...	...	...	...	...	...	...	...	...	...
Abercromby	...	...	...	...	...	...	...	...	...	...	...
Everton	1	...	...	1	...	1	...	...	1	2	3
Kirkdale	...	...	...	...	1	...	...	...	1	...	1
Edge Hill	...	...	...	...	...	...	...	...	...	...	...
Toxteth	1	1	...	...	...	...	1	...	2	1	3
Walton	...	1	...	...	...	...	...	...	...	1	1
West Derby	...	...	...	...	...	...	...	1	...	1	1
Wavertree	2	...	...	...	...	...	...	...	2	...	2
Fazakerley	...	...	...	...	...	...	...	...	...	...	...
Woolton	...	...	...	...	...	...	...	...	...	...	...
City	4	2	...	1	1	1	1	1	6	5	11

AGES AT DEATH.													
Under 1 year.	1—	2—	3—	4—	5—	10—	15—	20—	30—	40—	50—	60 and up-wards.	All Ages.
2	2	...	2	...	1	1	2	...	1	...	...	...	11

AGES OF NOTIFIED CASES.													
20	64	77	107	131	609	221	84	66	22	5	1	...	1407
28·3%					43·3%		15·7%		12·7%				

PERCENTAGE FATALITY AT EACH AGE.													
10·0	3·1	...	1·8	...	0·2	0·5	2·4	...	4·6	...	...	..	0·8

N.B.—Deaths in institutions are transferred to the districts from which the patients came.

RETURN CASES.—Cases occurring within the outside margin of one month of the discharge of a case from hospital to the same house were regarded as “return cases.” Of the cases discharged from hospital after suffering from scarlet fever, 20 or 2·2 per cent., were associated with recurrent infection in this way. The proportion of “return cases” to cases discharged from hospital was 1·8 in 1920, 2·7 in 1921, 3·3 in 1922, 2·6 in 1923, 3·4 in 1924, 3·3 in 1925, 2·9 in 1926, 1·8 in 1927, 2·2 in 1928, 1·6 in 1929, and 2·1 in 1930.

Table 5.

SCARLET FEVER, RETURN CASES.

	1931.		Average of past 12 years.		
	No. of cases associated with return cases.	Expressed as a percentage of cases discharged from hospital.	No. of cases associated with return cases.	Expressed as a percentage of cases discharged from hospital.	3 monthly means
January ...	2	1·2	7·0	2·8	2·7
February ...	—	—	5·7	2·6	2·7
March ...	2	2·1	5·1	2·7	2·6
April ...	4	4·6	4·7	2·6	2·6
May ...	1	1·1	4·5	2·4	2·3
June ...	1	1·0	3·7	2·0	2·3
July ...	4	4·4	4·6	2·5	2·2
August ...	1	1·5	3·7	2·2	2·0
September ...	1	1·2	2·5	1·4	1·9
October ...	—	—	4·1	2·2	1·7
November ...	1	0·7	4·0	1·5	2·1
December ...	3	2·4	7·8	2·6	2·3
WHOLE YEAR	20	2·2	56·8	2·3	2·3

DICK TESTING AND IMMUNISATION AGAINST SCARLET FEVER.

The principles of this method of preventing scarlet fever are identical with those described as available against diphtheria (see p. 54), except that no anti-toxin is given with the toxin, which is used unmodified. The nursing and/or other staffs of the City Hospital, Fazakerley, City Hospital North and City Hospital South and Alder Hey Hospital have been tested and/or immunised against scarlet fever with satisfactory results.

In addition to the above, up till the end of 1930 there had been tested for susceptibility to scarlet fever 1,004 children, of whom 208 were found susceptible. A total of 423 children had been immunised.

At the clinic at the Carnegie Welfare Centre children have been inoculated since November, 1930, usually concurrently with inoculation against diphtheria. A similar double inoculation has been given to children attending the Day Nurseries. Material for inoculation has also been sent to a small but increasing number of medical practitioners.

The following table shows the number inoculated by the several methods during 1931:—

Table 6.

SCARLET FEVER IMMUNISATION.

Numbers of persons tested and inoculated with material supplied by the Health Committee

		Dick Positive.	Dick Negative.	Fully Inoculated.	Partially Inoculated.
Public Health Department ...	...	26	83	136	—
Carnegie Welfare Centre ...	...	38	30	347	11
Schools ...	...	—	—	—	—
City Hospitals:—					
Fazakerley ...	...	—	—	165	—
City Hospital East ...	...	—	—	—	—
City Hospital South ...	...	—	1	15	—
Alder Hey ...	...	39	66	36	—
Medical Practitioners ...	...	—	—	148	2
TOTALS ...	...	103	180	847	13
		283		860	

Several institutions in which inoculation of the children entering the institution was systematically carried out remained almost free from the disease throughout the year.

MEASLES.

The number of deaths from measles has shown a tendency to decline in recent years. The number of deaths was 369 during 1931, as against an average of 275 for the past ten years. The mortality rate was 43·1 per 100,000 of the population.

Measles became a notifiable disease in 1915 by order of the Local Government Board (now the Ministry of Health); the disease is no longer generally notifiable, but in Liverpool is notifiable on a voluntary basis. During the year 7,572 cases came under the notice of the Medical Officer of Health, the sources of information being as follows:—

Notified by medical practitioners ...	6,033
Information from schools, etc. ...	1,539

Of these cases 948 were removed to hospital. The proportion of deaths to notified cases, or fatality rate, was 4·9 per cent., the average of the past ten years being 3·3 per cent. The mortality in measles depends mainly upon the age at which infection occurs; as shewn in Table 3, the great majority of the deaths occur in children under four years of age. Any increase in the proportion of cases among children under this age will be attended by a corresponding rise in fatality. Of the 369 fatal cases, 356, or 96 per cent., were under 5 years of age, and 270, or 73 per cent., under two years old.

The experience of the past eleven years is shown in the following table :

Table 1.

	1921.	1922	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.
Cases	9,143	3,570	11,089	5,709	11,202	8,694	10,606	6,025	10,546	5,966	7,572
Deaths	328	171	356	148	406	221	345	177	427	170	369
Case rate per 1,000 inhabitants	11·2	4·3	13·4	6·9	13·3	10·3	12·4	6·96	13·19	6·78	8·84
Death rate per 100,000 inhabitants	40	21	43	17·7	48·3	26·0	40·3	20·4	50·1	19·3	43·1
Fatality rate (percentage of deaths per 100 cases) ...	3·6	4·8	3·2	2·6	3·6	2·5	3·2	2·9	4·0	2·8	4·9

The proportion of cases removed to hospital in 1931 was 12·5 per cent., as against 14·2 per cent. in 1930 and 15·6 per cent. in 1929.

The experience of many years has shown that measles tends to recur in waves which follow each other at intervals of about 92 weeks. The periodic recurrences are very regular over considerable periods, but when the epidemic is due to reach its height in one of the three autumn months, August, September or October, it fails to do so, two maxima occurring instead, one before and the other after the expected date. On the other hand, when the epidemic is due to occur in the winter a severe outbreak may be anticipated, as was the case in 1929 and 1931.

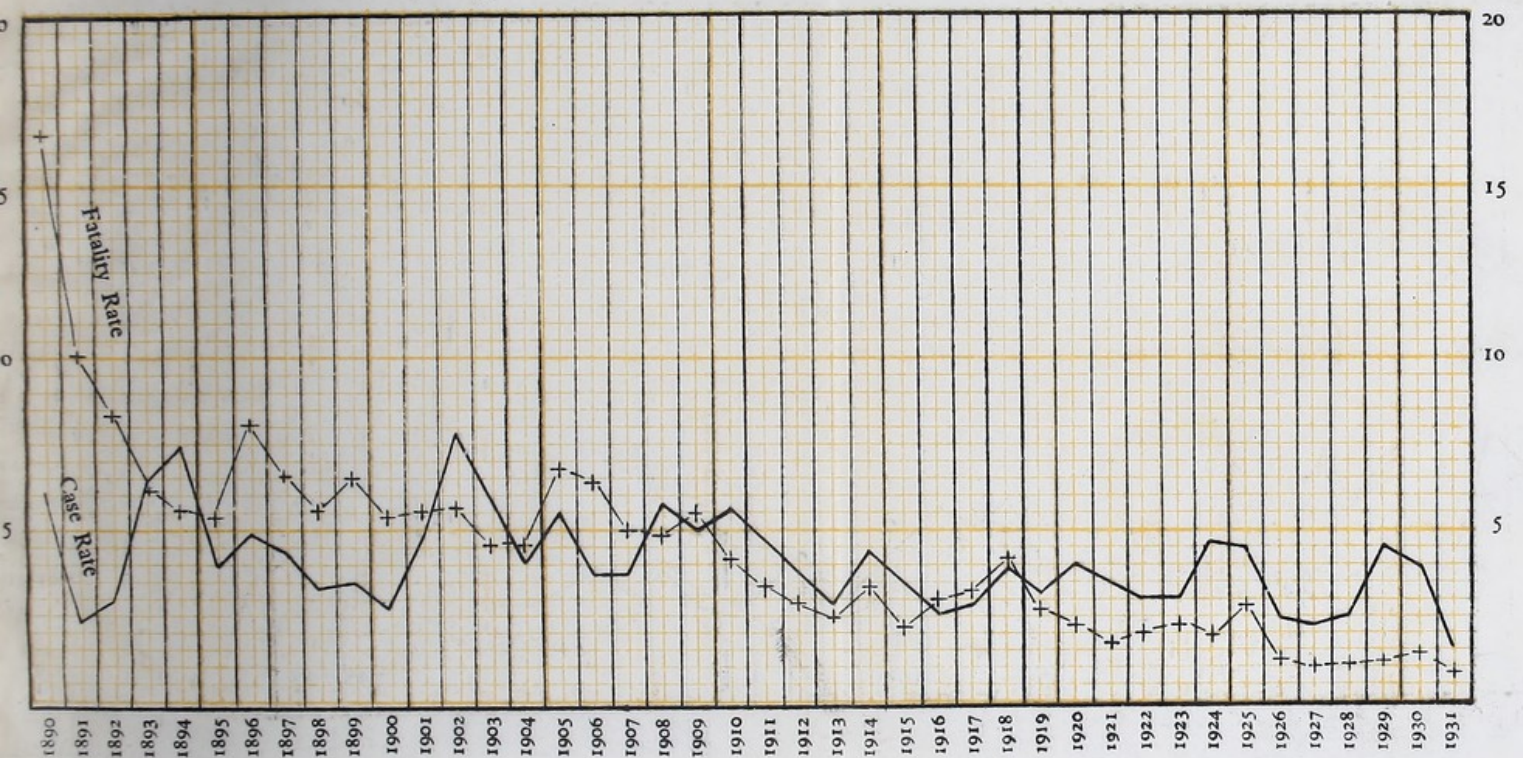
The second table shows the deaths from measles in the several districts of the city during the past eight years. A regular periodicity in alternate years will be noted; it will, however, also be observed that in the Northern districts, namely, Kirkdale and Walton, there is a tendency for the epidemics to occur at four-yearly intervals. In 1931, Exchange, Everton and Toxteth—the more central districts of the city—were principally affected, 198 out of the total of 369 deaths occurring in those districts. These districts also have a higher birth rate than the rest of the city, and it is probable that their greater mortality from measles is dependent upon the earlier age at which the children living in these districts are attacked by measles, as well as their greater density of population.

The third table gives the ages of attack of the 6,033 cases notified by doctors, and of the 369 deaths, and from these figures the corresponding fatality rates per 100 cases at each age have been obtained. It will be seen that the fatality rates in the first three years of life are considerably higher than at any subsequent period.

The following table gives the notified cases and deaths at each age for the ten-year period 1922-31 :—

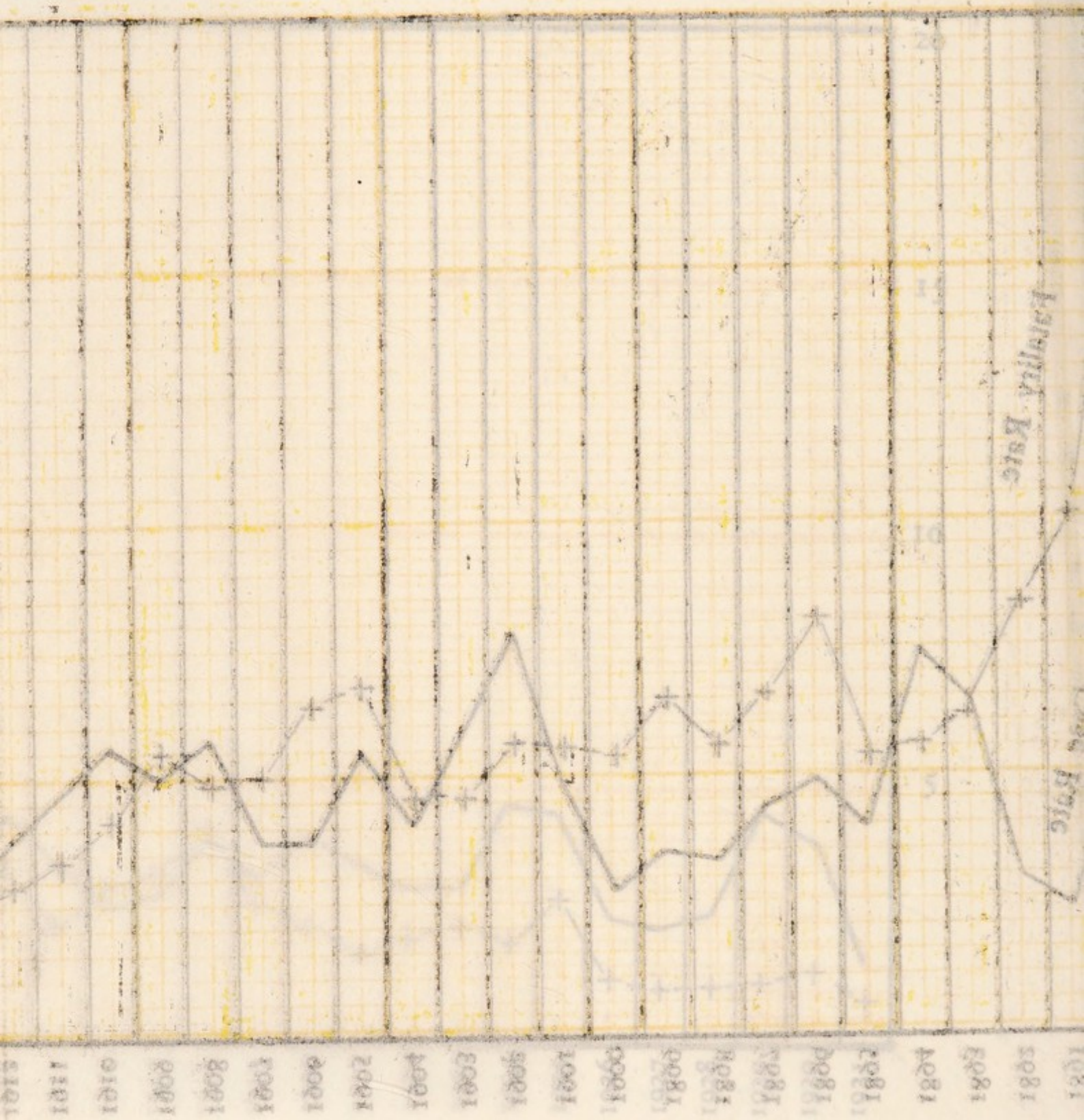
CITY OF LIVERPOOL.

Scarlet Fever 1890—1931: Case Rate per 1000 Population, and Fatality Rate per 100 Cases.

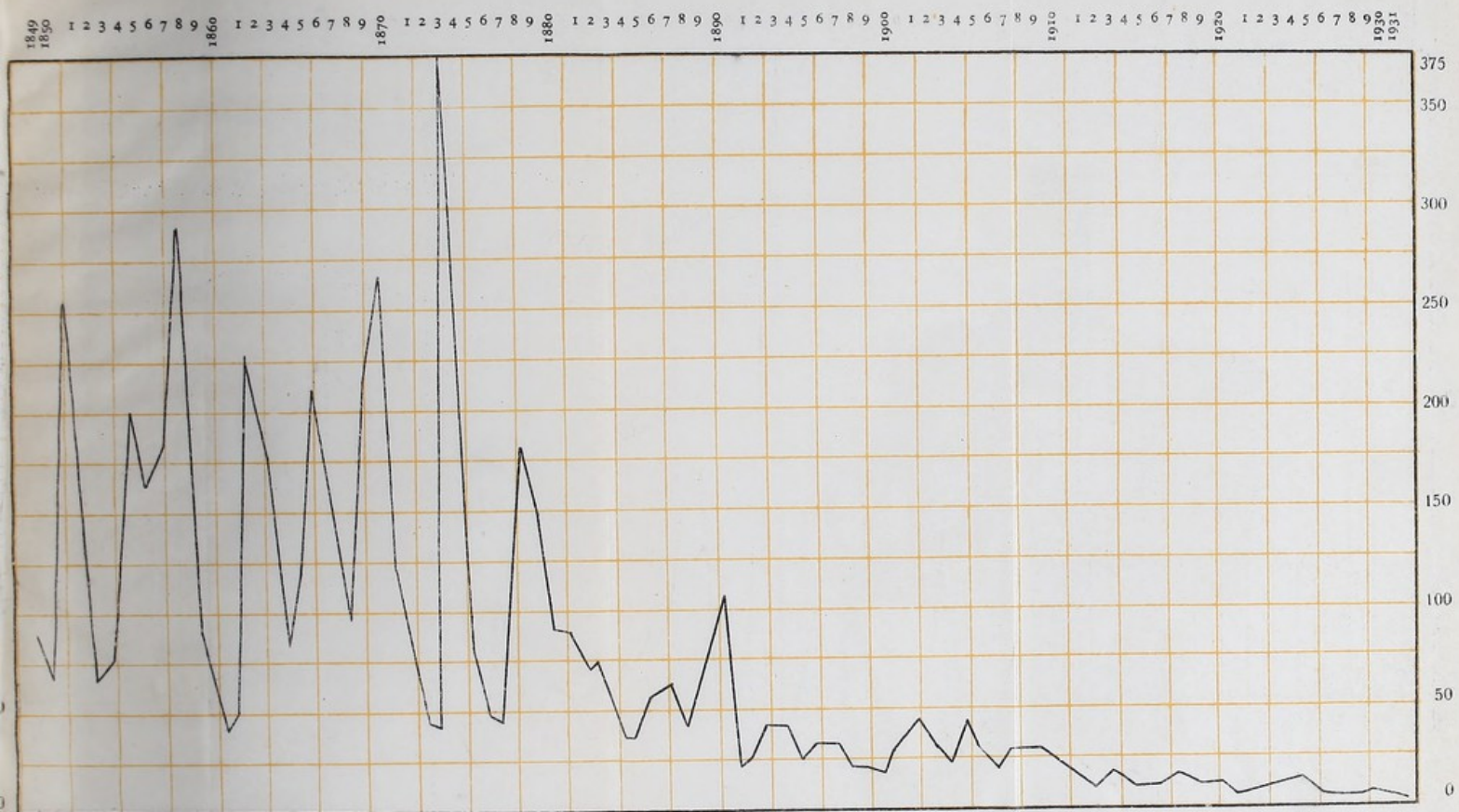


CITY OF LIVERPOOL

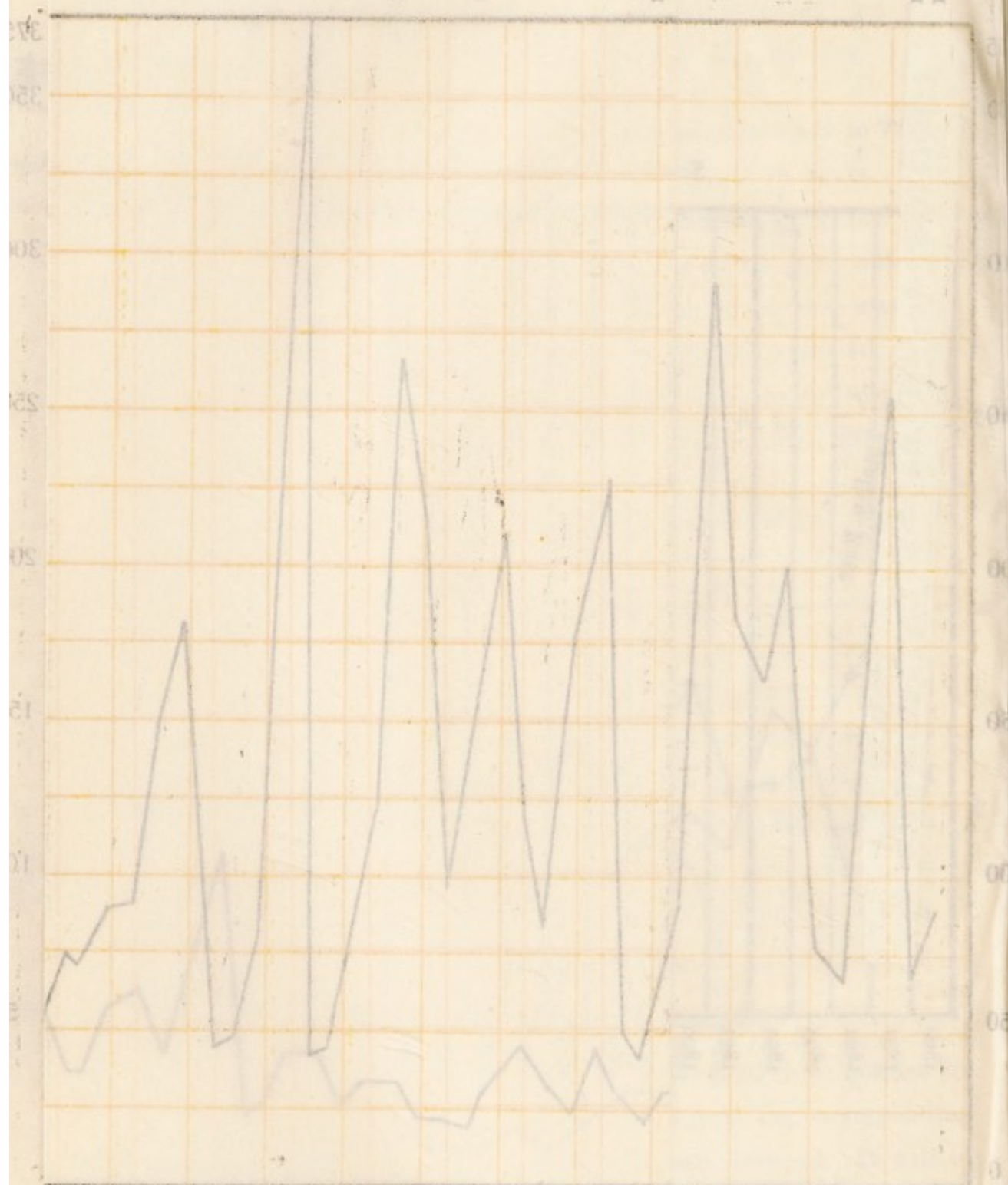
Scarlet Fever 1880-1931 Case Rate per 1000



CITY OF LIVERPOOL. Scarlet Fever Death Rate per 100,000 1849-1931.



1881 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030 2040 2050 2060 2070 2080 2090 2100



and deaths at each age

Ages.	0	1	2	3	4	5	6	7	8	9	10-15
Cases ...	5196	9539	8583	8319	8058	12222	9140	3259	1398	766	1666
								27,180			
Deaths ...	782	1486	504	171	65			110			5
Fatality Rate (percentage of deaths to cases).	15.1	15.6	5.9	2.1	0.81			0.40			0.30

Thus in a total of 68,541 notified cases there occurred 3,223 deaths, or 4.72 per cent. It will be noted that between the second and fifth years of life the fatality rate at any year of life is approximately one-third of that in the preceding year; in other words, for every year that a child survives during this period of life without being attacked by measles its chance of dying if attacked is diminished to a third of that which held good in the previous year. This indicates the great importance of deferring attack by measles until at least the sixth year of life. After that age the chances of dying if attacked do not vary much.

Apart from school closure, referred to elsewhere, other measures to limit the ravages of the disease include efforts to secure the isolation of the patients; in view of the heavy mortality among children under three years of age, parents are strongly urged to keep those of tender age apart from those already affected. Children coming from a house in which a case of measles has occurred are excluded from school for 16 days; children over 7 years of age who have already had measles are exempted from such exclusion.

An Order of the Ministry of Health authorises local authorities to provide medical assistance including nursing for the poorer

inhabitants of their district, and two nurses of the Health Visitors' Staff are engaged on this work, assisted by other members of the staff as occasion requires. In consequence of the visits of these nurses, many children have benefited from the assistance and advice given, and in some instances children have been removed for hospital treatment who would otherwise have been left at home without adequate care and attention. The visits, etc., made by these nurses in the course of 1931 were as follows:—

New cases visited during the year ...	...	5,611
Cases nursed	„ „ ...	437
Re-visits to cases	„ „ ...	4,962

As a high proportion of deaths from measles are due to complications, mainly pneumonia, there can be little doubt that the work of these nurses has resulted in much saving of life.

Table 2.

Deaths from measles for the years 1924 to 1931, after distribution of the institutional deaths according to the place of residence:—

District.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.
Exchange ...	20	112	51	83	40	108	42	
Abercromby ...	8	33	15	31	13	33	12	
Everton ...	30	81	44	88	34	87	16	
Kirkdale...	13	36	16	13	9	35	19	
Edge Hill ...	12	28	29	30	8	30	14	
Toxteth ...	35	58	35	48	27	48	31	
Walton ...	10	17	13	14	13	24	12	
West Derby ...	10	14	8	11	16	37	4	
Wavertree ...	7	29	9	27	11	19	8	
Fazakerley ...	3	...	...	...	6	6	12	
Woolton ...	...	1	1	...	...	...	—	
Total ...	148	406	221	345	177	427	170	2

Table 3.
DEATHS FROM MEASLES.

DISTRICTS	QUARTERS.								YEAR 1931.		
	March		June.		Sept.		Dec.		M.	F.	Total
	M.	F.	M.	F.	M.	F.	M.	F.			
Exchange	26	29	4	3	...	1	3	2	33	35	68
Abercromby	12	6	4	2	...	...	...	...	16	8	24
Everton	32	16	7	2	1	...	1	1	41	19	60
Kirkdale	4	6	...	4	...	1	...	...	4	11	15
Edge Hill	15	9	1	1	...	...	...	...	16	10	26
Toxteth	25	28	7	4	2	...	3	1	37	33	70
Walton	3	9	2	4	...	1	...	...	5	14	19
West Derby	8	3	7	1	...	...	...	1	15	5	20
Wavertree	14	13	7	6	1	...	...	1	22	20	42
Fazakerley	7	10	4	2	...	1	...	...	11	13	24
Woolton	...	...	...	...	1	...	...	...	1	...	1
City	146	129	43	29	5	4	7	6	201	168	369

AGES AT DEATH.													
Under 1 year.	1—	2—	3—	4—	5—	10—	15—	20—	30—	40—	50—	60—	All Ages.
103	167	60	15	11	13	...	...	...	...	...	...	...	369

AGES OF NOTIFIED CASES.										
495	854	817	737	793	2123	145	69			6033

PERCENTAGE FATALITY AT EACH AGE.										
20·8	19·5	7·3	2·0	1·4	0·6	...	...			6·1

N.B.—Deaths in public institutions are transferred to the districts from which the patients came.

WHOOPIING COUGH.

Whooping cough was very prevalent during 1931, and this prevalence continued during the first quarter of 1932. The number of cases coming to the notice of the Medical Officer during 1931 was 2,267, and the number of deaths 189, corresponding to a death rate of 22·1 per 100,000 inhabitants. The average death rates from whooping cough during the past 80 years, together with the death rates for 1930 and 1931 are as follows :—

1850-59	...	...	...	...	...	...	103·6
1860-69	...	...	...	...	...	...	107·3
1870-79	...	...	...	...	...	...	86·8
1880-89	...	...	...	...	...	...	72·9
1890-99	...	...	...	...	...	...	56·3
1900-09	...	...	...	...	...	...	45·0
1910-19	...	...	...	...	...	...	32·6
1920-29	...	...	...	...	...	...	23·4
1930	...	...	...	...	...	...	8·5
1931	...	...	...	...	...	...	22·1

This shows a very considerable decline in mortality during this period. Whether the decline is due to lessened prevalence, to alterations in the age-incidence, or to lowered virulence cannot be ascertained from the figures. The following table shows for the past ten years the number of cases coming to the notice of the Medical Officer, the number of deaths, the death rates per 100,000 inhabitants, and the deaths per 100 notified cases :—

Years.	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931
Cases	2025	2261	2321	2274	1971	1988	2313	1876	1147	2267
Deaths	182	156	169	227	188	125	269	198	75	189
Death rate per 100,000 of the population ...	22	19	20	27	22	15	31	23	8·5	22·1
Percentage of deaths to cases	9·0	7·9	7·3	9·9	9·5	6·3	11·6	10·5	5·5	8·3

As the disease is not compulsorily notifiable, caution is necessary in drawing conclusions from the figures relating to cases and fatality rates. Whooping cough is extremely fatal in the first two or three years of life, and it is of the utmost importance that children of tender years should be protected from possible sources of infection.

CEREBRO-SPINAL FEVER.

Fifty-seven cases of cerebro-spinal fever occurred during 1931, of which 47 (or 81 per cent.) proved fatal, making a death rate of 5·5 per 100,000 of the population. The cases during the years 1918 to 1930 were 17, 26, 27, 26, 18, 8, 13, 24, 16, 25, 21, 23 and 21 respectively.

The increase in the number of cases reported in Liverpool during 1931 and indicated by these figures, corresponds to a general increase not only in the British Isles but also in the United States of America and also in several European States.

ENCEPHALITIS LETHARGICA.

During 1931, after excluding duplicate notifications there were 35 cases which remained in the records as cases of encephalitis lethargica. There were 26 deaths certified as from encephalitis lethargica; of these seven were deaths of persons notified in earlier years and whose malady had become chronic, and eight deaths were of chronic cases not notified in earlier years; the net total of deaths attributable to encephalitis lethargica contracted in 1931 was therefore six. During the period 1918-1931 there have been notified 716 cases, of which 262, or 36·6 per cent., have sooner or later proved fatal. The mean fatality rate of acute cases has been 25·8 per cent. during the past 10 years. The incidence and mortality during this period are shown in the following table:—

CITY OF LIVERPOOL.
ENCEPHALITIS LETHARGICA (1921-1931).

	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931
Cases	27	5	111	189	108	114	69	54	28	27	19
Rate per 1,000 population	0.03	0.01	0.13	0.22	0.13	0.13	0.08	0.06	0.03	0.03	0.01
Deaths... ..	6	3	36	22	44	29*	25†	24**	26††	18§	21
Rate per 100,000 population	0.73	0.36	4.30	2.40	5.22	3.4	2.92	2.8	3.0	2.0	2.1
Fatality per 100 cases	22.2	40	32.4	10.6	40.5	25.5*	36.2†	44.4**	92.8††	66.6§	74
Do. (Acute cases only)	...	...	...	...	...	21.9	23.0	20.4	35.0	25.8	51

* This number and rate include the deaths of 4 persons who were either notified in earlier years or were transferred from outside districts. If these deaths are excluded the fatality rate becomes 21.9 per cent.

† This number and rate include the deaths of 9 persons who were either notified in earlier years or were transferred from outside districts. If these deaths are excluded the fatality rate becomes 23 per cent.

** This number and rate include the deaths of 13 persons who were either notified in earlier years or were transferred from outside districts. If these deaths are excluded the fatality rate becomes 20.4 per cent.

†† This number and rate include the deaths of 11 persons who were notified in earlier years. If these deaths are excluded the fatality rate becomes 53.5 per cent. If the eight chronic cases notified in 1929 are excluded the fatality rate becomes 35 per cent.

§ This number and rate contain the deaths of 5 persons who were notified in earlier years. If these deaths are excluded the fatality rate becomes 48.1 per cent. If the six chronic cases notified and dying in 1930 are also excluded the fatality rate becomes 25.8 per cent.

§§ This number and rate contain the deaths of 9 persons who were notified in earlier years. If these deaths are excluded the fatality rate becomes 66.6 per cent. If the chronic cases notified and dying in 1931 are also excluded the fatality rate becomes 52.6 per cent.

The old standing cases which died in 1931 were notified as follows:—1920 one, 1923 four, 1925 one, 1926 two, 1927 one, not notified before, eight.

Thirteen of these cases were males and twenty-two were females.

ACUTE ANTERIOR POLIOMYELITIS (INFANTILE PARALYSIS).

During 1931, 7 cases of poliomyelitis were notified, 4 of which, or 57.1 per cent., proved fatal. In 1930, 7 cases were reported, whilst 14, 4, 19, 15, 6 and 23 cases were reported in the years 1924 to 1929. The cases during 1931 were reported as follows:—March, 1 case; August, 1 case; September, 1 case; October, 2 cases; November, 2 cases. The notification of cases of poliomyelitis is probably very incomplete. Three of the above were notified as polio-encephalitis.

INFLUENZA AND OTHER RESPIRATORY DISEASES.

Respiratory diseases cause a varying proportion of the total deaths from all causes. In the decennial period 1871-80 the proportion of deaths certified as due to respiratory diseases was 20·2 per cent. of all deaths; in 1911-20, 27·3 per cent.; and in 1931, 19·6 per cent. of all deaths were respiratory; the variations correspond to the prevalence of influenza. The table below shows for deaths due to respiratory diseases the actual numbers, the percentage proportion to all deaths, the death rates per 1,000 population, and the death rates expressed as a percentage proportion of the rates experienced in 1871-80 (index figures):—

DEATHS FROM RESPIRATORY DISEASES. (Including Influenza).

	Actual numbers of deaths.	Percentage proportion to all deaths.	Death-rate per 1,000 population.	Death-rates as a percentage proportion of rate experienced in 1871-80.
1871-80 ...	29,763	20·2	5·7	100
1881-90 ...	32,507	23·2	5·9	104
1891-1900	35,819	24·6	5·9	104
1901-10 ...	32,995	21·8	4·5	79
1911-20 ...	36,480	27·3	4·73	83
1921-25 ...	15,075	25·8	3·64	63·8
1926 ...	2,809	24·1	3·30	57·7
1927 ...	3,083	26·0	3·60	63·1
1928 ...	2,587	22·6	3·0	52·6
1929 ...	3,243	27·7	4·18	73·5
1930 ...	2,242	19·9	2·55	44·7
1931 ...	2,397	19·6	2·8	49·1

The rate per 1,000 population had therefore declined in 1931 to 49·1 per cent. of the 1871-80 rate. The decline, however, has not been steady; a rise occurred in 1881-90, and continued into the following decennium. A later rise occurred in 1911-20 owing to the virulent influenza pandemic of 1918-19. Rises also occurred in 1929 and 1931.

The experience of earlier years has shown that epidemics of influenza recur at intervals of 33 weeks, or multiples of this period; the most

severe outbreaks are those which occur in the winter months, namely, from January to March. An outbreak was anticipated about the last week of November, 1930, but actually occurred early in 1931.

In Liverpool, the first definite appearance of influenza in epidemic form in 1931 was in the second week of January, when 14 deaths were so ascribed. The number of deaths from all forms of respiratory disease showed evidence of a rise during the same week, when 123 deaths were so registered. The disease continued in epidemic form for six weeks, during which period 128 deaths were certified as being due to influenza. Comparing the first nine weeks of 1931 with the corresponding period of 1930, a year largely free from influenza, there occurred 3,262 deaths in 1931 and 1,916 deaths in 1930, or an excess of 1,346 in 1931.

An examination of the deaths at several ages from a number of causes shows that nearly half of this excess of mortality during 1931 over 1930 occurred at ages 65 and upwards; further, the greater part of this excess, 686 deaths in all, was to be accounted for by diseases of the respiratory system, and 114 deaths to diseases of the heart and blood vessels. This latter group probably owes its increase as much to the severity of the weather as to the effects of influenza:—

City of Liverpool—January 1st to March 2nd.

Excess of mortality of 1931 over 1930 from certain causes.

	0-1	1-5	5-15	15-65	Over 65	TOTAL.
Influenza	9	7	2	102	73	193
Other Respiratory Diseases	63	97	2	124	198	484
Pulmonary Tuberculosis	—	3	—	6	—	9
Organic Disease of the Heart	—	—	—	27	47	74
Diseases of Blood Vessels	—	1	—	14	25	40
	72	108	4	273	343	800

The serious incidence of excess of respiratory diseases upon young children is especially to be noted.

The height of the epidemic in this city was reached in the week ended January 24th, 1931, when 529 deaths were registered. Comparison with the outbreaks of 1918 and 1919, when 626 and 638 deaths were recorded in the peak weeks, shows that this outbreak was of similar severity:—

City of Liverpool.

Week ended.	Total Deaths All causes.	Weekly Death Rate per 1,000 of estimated population.	NO. OF DEATHS FROM		Proportion of respiratory deaths to total deaths.
			Influenza.	Other Respiratory Diseases.	
Oct. 19th, 1918...	626	41·6	198	182	60·7
Feb. 22nd, 1919...	638	42·5	169	232	62·7
Feb. 18th, 1922...	520	33·6	51	215	51·1
Feb. 26th, 1927...	443	27·0	45	193	53·5
Feb. 2nd, 1929...	606	37·8	72	237	50·1
Jan. 24th, 1931...	529	31·3	67	185	37·0

At an early stage in the epidemic, it became apparent that certain schools were acting as foci of infection. A large number of schools (90) were closed partially or completely for periods of one or two weeks on the recommendation of the medical officer. As in 1929, there was, concurrently with the outbreak of influenza, an extensive outbreak of measles; there is reason to believe that the severity of the measles epidemic was aggravated by the simultaneous prevalence of influenza and its sequels.

Owing to the numerous cases of pneumonia receiving treatment in the Transferred Hospitals, the pressure upon these institutions during the height of the epidemic became severe. In the case of children the accommodation in the Olive Mount Children's Hospital was available during convalescence or for minor ailments. In the case of adults the pressure on the beds was considerable, and a number of acute cases had to be admitted into the Belmont Road Institution.

A definite, though small, outbreak occurred in the last quarter of the year 1931. During the week ended December 12th there were 10 deaths from influenza and 84 were ascribed to other respiratory diseases.

The following table shows week by week during 1931 the total number of deaths from all causes, the general death rate, and the number of deaths from influenza, pneumonia, bronchitis, and the total respiratory deaths. These figures do not include the deaths of Liverpool residents which occurred outside the city. The high proportion of respiratory deaths occurring in January and February and again in December is well shown.

1931. Week ended	Total Deaths.	Weekly Death Rate per 1,000 of Estimated Population	NUMBER OF DEATHS FROM			Total Respira- tory Deaths.	Percenta Proporti of Respira- tory to Total Deaths
			Influenza.	Pneumonia and Broncho- Pneumonia	Bronchitis.		
JAN. (3 days) 3	93	—	—	15	2	18	19.4
10	375	22.6	14	57	54	123	32.8
17	433	26.1	26	77	64	149	34.4
24	529	31.7	67	105	72	185	34.9
31	447	26.9	58	88	57	150	33.5
FEBRUARY 7	349	21.1	26	73	26	102	29.2
14	300	18.2	17	50	17	71	23.7
21	272	16.6	6	21	16	41	15.1
28	258	15.7	9	26	17	46	17.8
MARCH 7	275	16.7	8	25	21	50	18.2
14	246	15.0	4	21	16	40	16.3
21	269	16.3	5	29	26	58	21.6
28	235	14.3	1	21	14	44	18.7
1st Quarter	4,081	19.1	241	608	402	1,077	26.4
APRIL 4	229	14.0	5	27	13	44	19.2
11	247	15.0	2	30	18	51	20.6
18	206	12.6	2	21	12	34	16.5
25	227	13.8	1	14	6	23	10.1
MAY 2	228	13.9	3	18	11	36	15.8
9	206	12.6	3	25	6	31	15.0
16	196	12.0	—	21	9	31	15.8
23	193	11.8	—	14	3	20	10.4
30	205	12.5	1	22	8	33	16.1
JUNE 6	181	11.1	2	17	4	22	12.1
13	192	11.8	1	20	5	27	14.1
20	163	10.1	—	17	4	22	13.5
27	146	9.1	1	8	2	10	6.8
2nd Quarter	2,619	12.2	21	256	101	384	14.7
JULY 4	174	10.6	1	13	7	21	12.1
11	178	10.8	1	6	3	12	6.7
18	153	9.3	—	12	5	18	11.7
25	161	9.8	1	12	2	19	11.8
AUGUST 1	159	9.7	—	7	2	12	7.5
8	149	9.1	—	12	3	20	13.4
15	156	9.5	—	10	7	18	11.5
22	142	8.7	1	5	4	12	8.4
29	167	10.2	—	6	6	15	8.7
SEPTEMBER 5	178	10.8	—	15	6	23	12.9
12	162	9.9	1	9	4	13	8.0
19	161	9.8	1	15	4	20	12.4
26	197	12.0	1	16	5	24	12.2
3rd Quarter	2,137	10.0	7	138	58	227	10.6

1931. Week ended.	Total Deaths.	Weekly Death Rate per 1,000 of Estimated Population	NUMBER OF DEATHS FROM			Total Respira- tory Deaths.	Percentage Proportion of Respira- tory to Total Deaths.
			Influenza.	Pneumonia and Broncho- Pneumonia	Bronchitis.		
OCTOBER 3	160	9.7	—	20	3	23	14.4
10	158	9.6	2	11	2	15	9.5
17	155	9.4	1	15	4	20	12.9
24	178	10.8	2	19	11	32	18.0
31	197	12.0	2	25	11	39	18.2
NOVEMBER 7	229	14.0	2	35	8	45	19.7
14	194	11.8	3	28	14	42	20.6
21	226	13.8	6	28	6	38	16.7
28	247	15.1	5	54	14	71	28.7
DECEMBER 5	261	16.0	6	55	16	76	29.4
12	265	16.2	10	64	18	89	33.6
19	283	17.2	9	42	22	67	23.4
26	236	14.4	9	34	17	54	23.0
(5 days) 31	260	—	10	50	17	70	26.9
4th Quarter	3,049	14.3	67	480	163	681	22.3
Total 12 months ...	11,886	13.9	336	1,482	724	2,369	19.9

PUBLIC HEALTH (INFECTIOUS DISEASES) REGULATIONS, 1927.

The following statement shows the number of notifications received under the regulations and the number of deaths during 1930 and 1931 :—

	1930.		1931.	
	Cases.	Deaths.	Cases.	Deaths.
Acute Pneumonia	2,545	1,253	2,971	1,502
Malaria	125	12	98	3
Dysentery	27	4	12	5
	2,697	1,269	3,081	1,510

Enquiries were made into all these cases; 1,365 cases of influenzal pneumonia were visited and six received assistance from nurses appointed for the purpose, 98 revisits being made.

DYSENTERY.

During 1931 12 cases of dysentery were reported in the city in addition to four cases which were brought into the Port of Liverpool on shipboard. Many of the cases reported in recent years are persistent infections acquired abroad on military service or otherwise.

There were five deaths from dysentery during the year.

It is probable that some of the deaths registered as from diarrhœa and enteritis are really deaths from dysentery.

DIGESTIVE DISEASES AND DIARRHŒA.

The following table shows the mortality from digestive diseases--including diarrhœa--in the City of Liverpool during the last 60 years :—

TABLE I.

	Actual Deaths.	Deaths expressed as a percentage of deaths from all causes.	Death-rate per 1,000 population.	Death-rates as a percentage of the 1871-1880 rate.
1871-1880	14,747	10·0	2·8	100·0
1881-1890	13,186	9·4	2·4	85·7
1891-1900	18,491	12·7	3·0	107·2
1900-1910	18,163	12·0	2·5	89·3
1911-1920	12,282	8·9	1·59	56·7
1921-1925	5,111	8·8	1·23	43·9
1926	952	8·2	1·12	40·0
1927	794	6·7	0·93	33·2
1928	784	6·8	0·90	32·1
1929	828	6·3	0·95	34·0
1930	663	5·9	0·75	26·8
1931	658	5·4	0·71	25·4

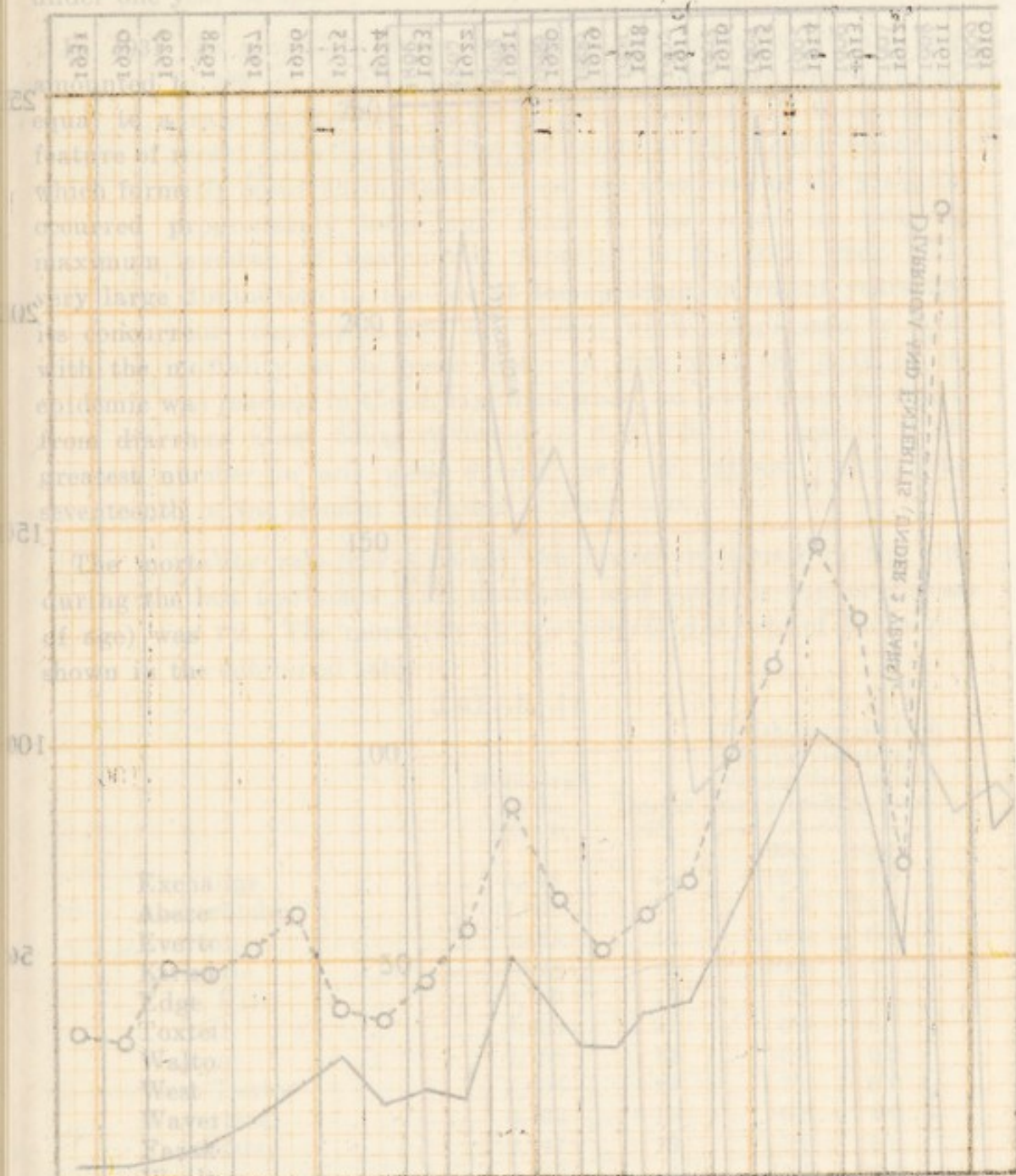
The deaths from digestive diseases, which had been very numerous prior to 1871, fell in the penultimate decade of last century, but rose again in the last decade. Since the early years of the present century there has been a marked decline in the number of deaths. This was especially so during the latter years of the war.

(PER 100,000 POPULATION, 1896-1931)

THE COMBINED RATE FROM DIARRHOEA

AND ENTERITIS (UNDER 5 YEARS), FOR 1911-1931.

(UNDER 5 YEARS), FOR 1911-1931.



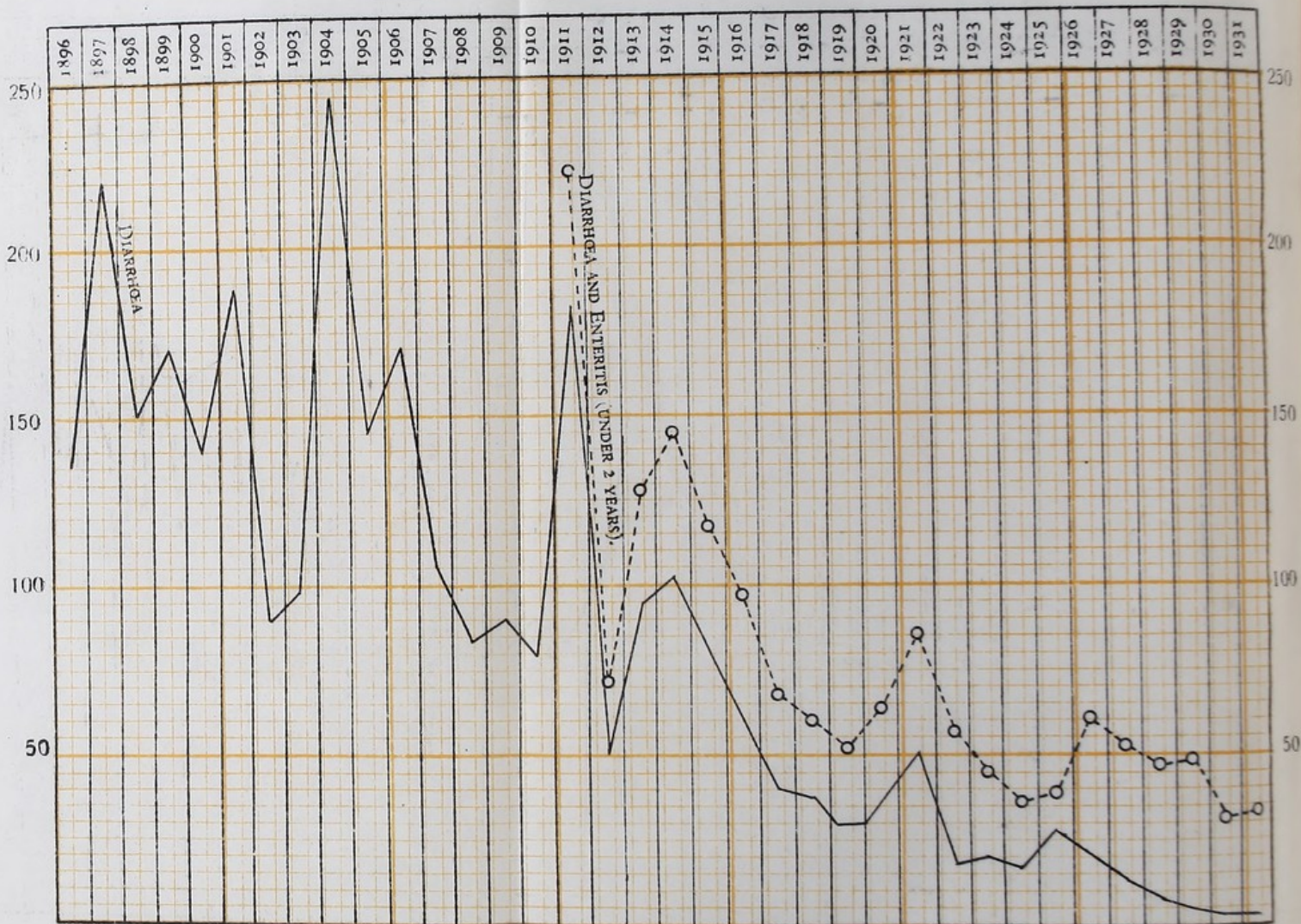
NOTE.—All deaths occurring in public institutions have been transferred to the district in which the patient resided.

CITY OF LIVERPOOL.

DIARRHŒA DEATH RATES (ALL AGES), PER 100,000 POPULATION, 1896-1931.

TOGETHER WITH THE COMBINED RATE FROM DIARRHŒA

AND ENTERITIS (UNDER 2 YEARS), FOR 1911-1931.



DEATHS FROM DIARRHOEA AND ENTERITIS.

Diarrhoea and enteritis form a large part of the deaths from digestive diseases. Of these deaths approximately two-thirds occur in infants under one year of age.

In 1931 the mortality from diarrhoea and enteritis at all ages amounted to 302, of which number 271 were under two years of age, equal to a rate of 31·6 per 100,000 of the population. A noticeable feature of recent years has been that the height of the summer epidemic, which formerly occurred in August, about the 31st week of the year, has occurred progressively later and later in the year. In 1931 the maximum number of deaths was reported in the 39th week. The very large diminution in the size of the epidemic in recent years and its concurrent retardation are well shown when comparison is made with the mortality in the year 1904. In that year the peak of the epidemic was reached in the thirty-third week, no fewer than 259 deaths from diarrhoea alone being recorded in that week, as against 15 the greatest number in any week during 1931, i.e., almost exactly one-seventeenth of the number recorded 27 years ago.

The mortality rate per 1,000 of the births registered in the City during the last two years from diarrhoea and enteritis (under 2 years of age) was 7·2. The mortality in the several districts of the city is shown in the subjoined table :—

TABLE II.

		Registered Births 1930-31	Deaths 1931.	Death Rate per 1000 births registered during the current and preceding years.	
				1930.	1931.
Exchange	...	5,049	48	12·3	9·5
Abercromby	...	1,898	24	7·4	12·6
Everton	...	5,429	44	6·6	8·1
Kirkdale	...	2,928	12	10·5	4·1
Edge Hill	...	3,705	18	6·2	4·6
Toxteth	...	6,038	37	5·9	6·1
Walton	...	2,756	19	3·4	6·9
West Derby	...	3,606	29	7·4	6·0
Wavertree	...	3,162	19	6·8	6·0
Fazakerley	...	2,847	16	3·9	5·6
Woolton	...	189	5	11·3	26·4
		37,607	271	7·2	7·2

NOTE.—All deaths occurring in public institutions have been transferred to the districts from which the patients came.

The corresponding rates for the whole city during the last five years were 13.3, 9.9, 9.9, 10.3, and 7.2 per 1,000 births registered in the preceding two years.

Of the 271 deaths under 2 years of age, the majority, namely, 191, took place in public institutions, as shown in the following table:—

TABLE III.

DEATHS FROM DIARRHOEA AND ENTERITIS UNDER TWO YEARS OF AGE.
IN INSTITUTIONS DURING 1931.

Alder Hey Hospital	...	...	...	128
Royal Liverpool Children's Hospital	...			22
Walton Hospital	...	...	...	3
Mill Road Infirmary	...	...	...	5
David Lewis Northern Hospital	...	...		2
Royal Southern Hospital	...	...	...	1
Belmont Road Institution	...	...	...	15
City Hospital Fazakerley	...	...		4
Olive Mount Children's Hospital	...	...		10
House of Providence	...	...	...	1
				191

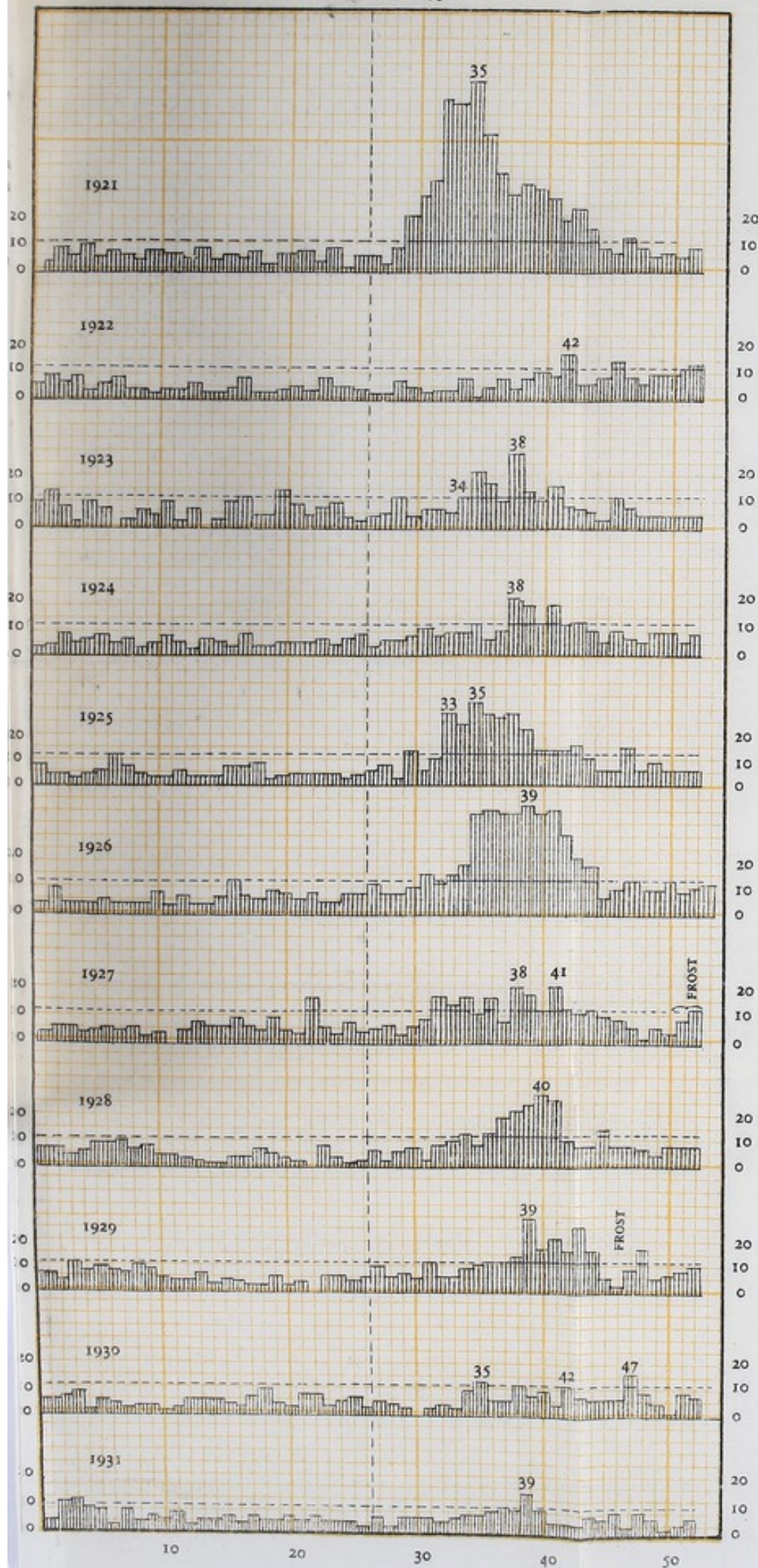
ENQUIRIES INTO FATAL CASES (under 2 years of age).

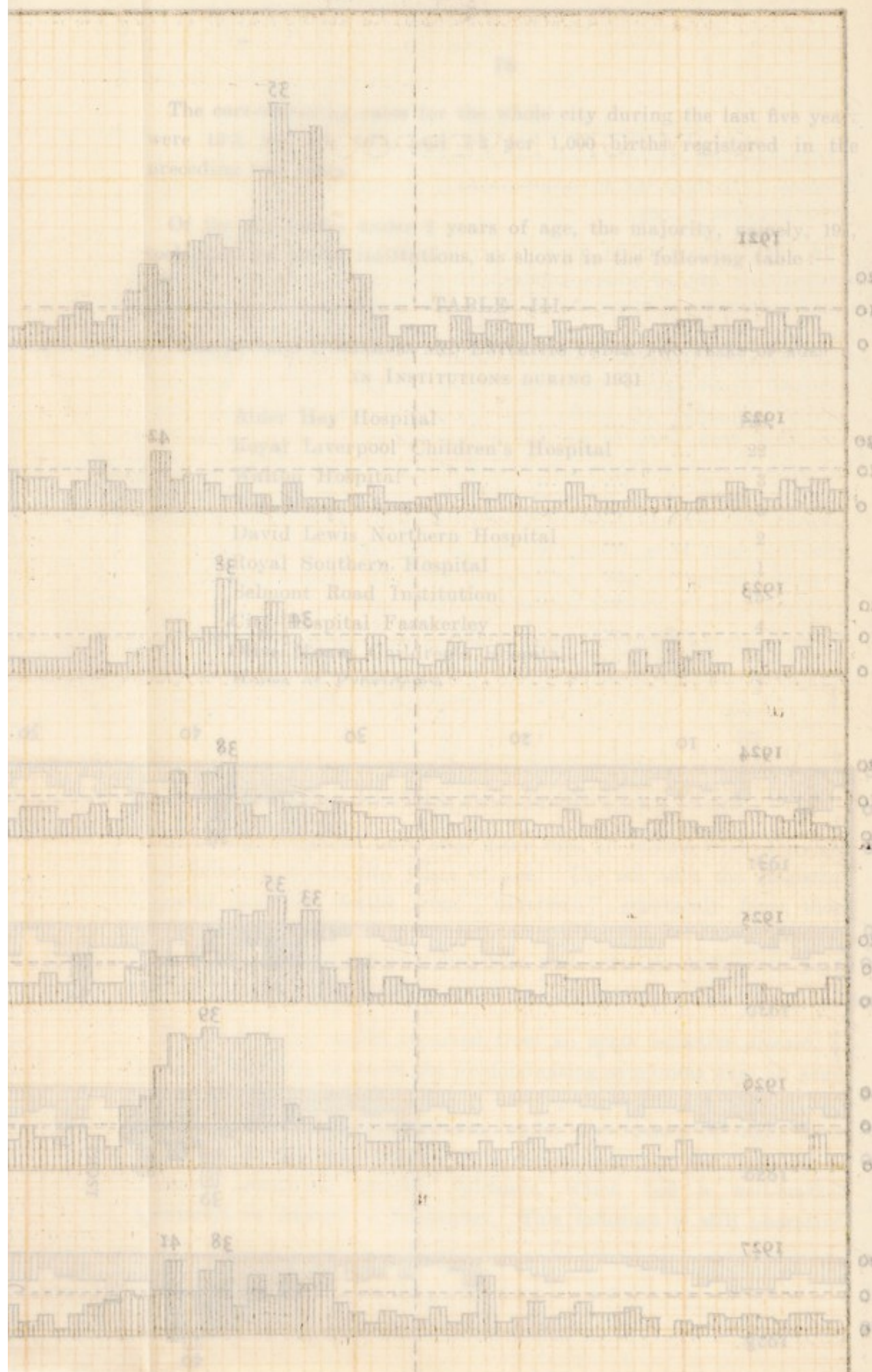
Since 1926 enquiries have been made into all deaths from diarrhoea and enteritis under two years of age. Up till 1911 the Registrar General classified deaths from "diarrhoea" separately from those included under the heading "enteritis." Since that date there has been included under the rubric "diarrhoea and enteritis under two years of age" a somewhat miscellaneous group of deaths.

Formerly many deaths occurred from an acute infective disease, or group of diseases, of which the predominating symptoms were an acute onset with diarrhoea and vomiting, often preceded by convulsions, and terminating rapidly, in children under two years of age, from depletion of the body fluids. This disease assumed the form of an annually recurring summer epidemic, which had a well-marked maximum in August or September. This influence is still operative,

CITY OF LIVERPOOL.

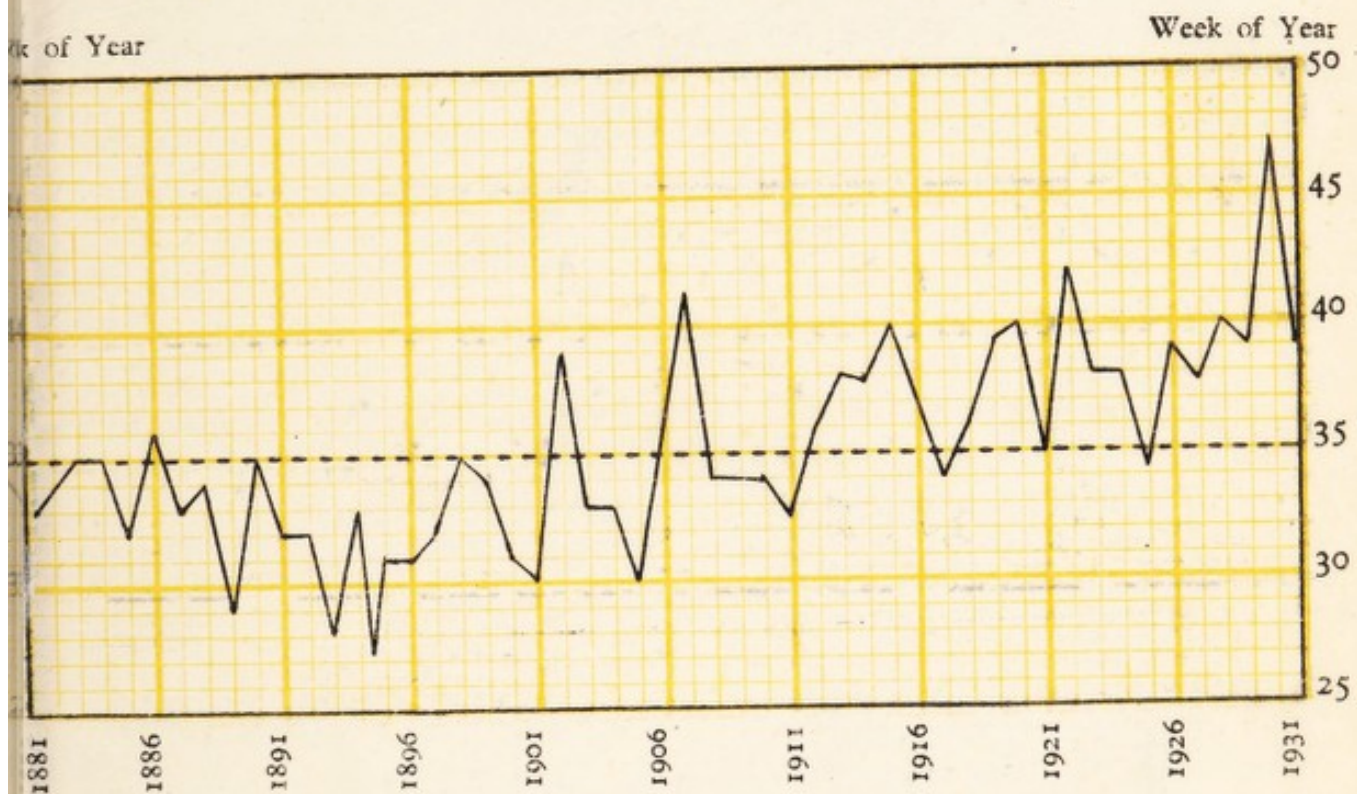
DEATHS FROM DIARRHŒA & ENTERITIS (UNDER 2 YEARS OF AGE) DURING THE YEARS 1921—1931.





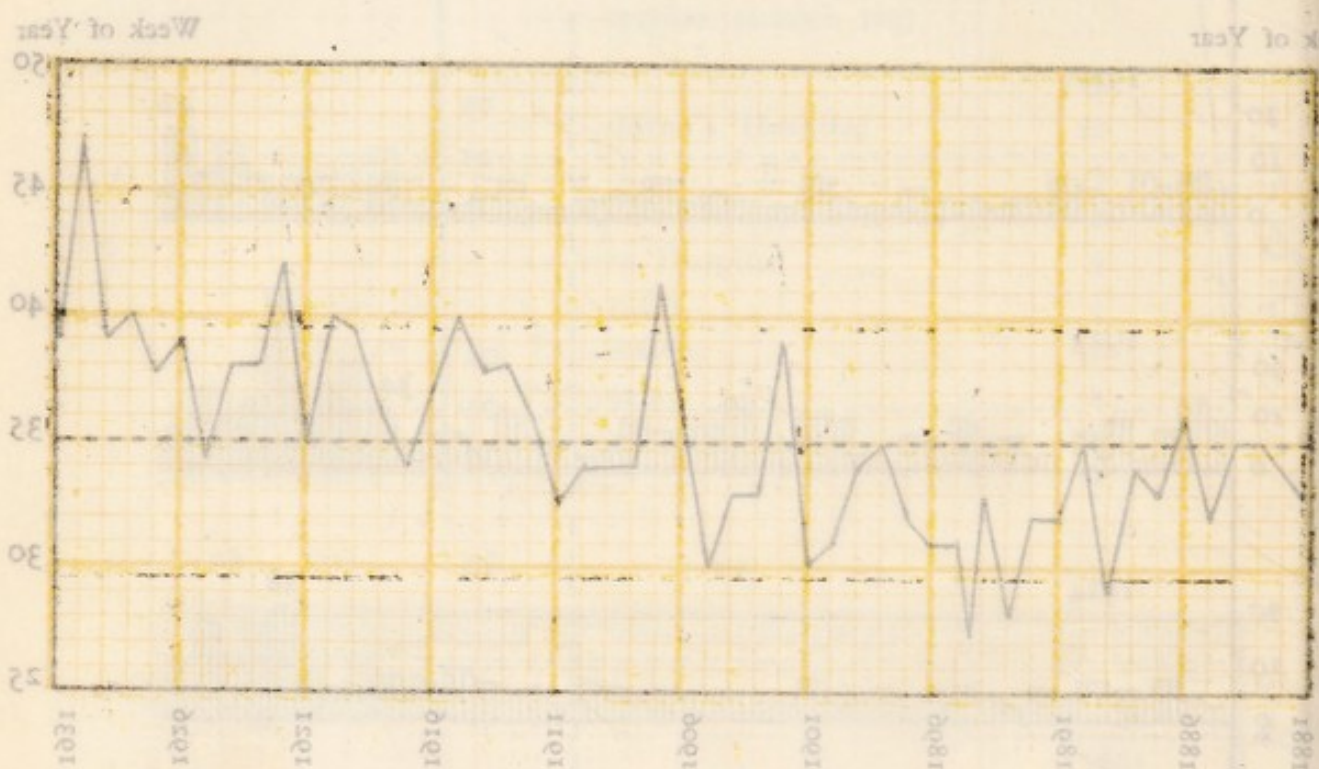
CITY OF LIVERPOOL.

Graph showing for each of the 50 years 1881-1931 the week in which the maximum number of deaths from Diarrhoeal Diseases was recorded. This Graph shows the progressive retardation of the height of the seasonal wave, a retardation which has occurred concurrently with the great decline and virtual extinction of Diarrhoea, as a cause of death.



CITY OF LIVERPOOL.

Graph showing for each of the 50 years 1881-1931 the week in which the maximum number of deaths from Diarrhoeal Diseases was recorded. This Graph shows the progressive retardation of the height of the seasonal wave, a retardation which has occurred concurrently with the great decline and virtual extinction of Diarrhoea, as a cause of death.



though to a much lesser degree. The figures given in Table V show that very few more deaths occurred in the second half of the year than in the first half.

The title *diarrhœa* is rapidly disappearing from the statistics of death. During 1931 there were only 26 deaths (of which 22 were under two years of age) thus certified, there being three in the first quarter, ten in the second quarter, eight in the third quarter, and five in the fourth. This title was to some extent replaced by the terms *enteritis* or *gastro-enteritis* or *ileo-colitis*. It might appear that these titles indicated diseases definitely located in the intestines, but this is far from being the case. Actually the terms "diarrhœa," "summer diarrhœa," "diarrhœa and vomiting," and the like did commonly refer to a definite disease, epidemic in occurrence, most frequent in hot seasons, and spread largely by flies. But the titles *enteritis* and the like, as now used, refer mainly to terminal conditions of intestinal derangement occurring in children either chronically sick from wasting diseases, and hence better classified under the title of *marasmus*, or acutely ill with pneumonia, bronchitis or other acute infection of origin entirely different from that of the once-prevalent diarrhœal diseases. And in yet another group of deaths the principal factor in causing death has been prematurity or other congenital condition, though the factor of infection cannot be excluded in many of the cases.

RESULTS OF ENQUIRY.

Enquiries were made into 275 of the deaths recorded. In some instances the parents could not be traced.

It was found that in 192 cases there was a predominant history of *wasting or marasmus*, in many of which diarrhœa was entirely absent. In 55 cases the onset of enteritis had been preceded by an attack of pneumonia or bronchitis, and in 13 others by measles, whooping cough, scarlet fever, or diphtheria. In 19 instances, where deaths were ascribed to enteritis, there was no diarrhœa.

Congenital conditions accounted for a number of deaths in which diarrhœa did not occur. In two instances there was present a congenital defect probably quite adequate in itself to cause death. In 13 cases the infant was known to have been premature; in a further 14 cases the infant was a twin, and in 2 cases, a triplet. In nine cases the infant was said to have been *delicate from birth*.

NEO-NATAL DEATHS.

Thirty-one deaths were of infants under 1 month old, the ages given being :—

0- 7 days	...	...	...	...	...	5
7-14 days	...	...	...	...	...	5
14-21 days	...	...	...	...	...	3
21-28 days	...	...	...	...	...	18

Acute intestinal infections are uncommon at these early ages, when the child is almost invariably breast-fed. In five of these cases the only symptoms were convulsions, the ages being (1) 1 week ; (1) 3 weeks ; (3) 4 weeks. It is probable that in most of these cases the death was caused by birth injuries during difficult labour, the convulsions having been erroneously ascribed to enteritis.

In two other cases the child suffered from pemphigus neonatorum, and the onset of enteritis was merely an incident of that fatal disorder. Other causes of death were broncho-pneumonia, thrush, spina bifida, prematurity and bronchitis. In only 16 instances vomiting and diarrhoea were present as the only symptoms.

OTHER ASSOCIATED DISEASES.

Apart from the respiratory diseases, 55 in number, referred to in a preceding paragraph, the following conditions were present, and in most cases were the cause of the child's admission to hospital :—

Impetigo	...	...	...	...	...	5 cases.
Eczema	...	...	...	...	...	7 „
Other skin diseases	...	...	...	...	...	1 „
Hernia	...	...	...	...	...	1 „
Otitis	...	...	...	...	...	3 „
Stomatitis	...	...	...	...	...	3 „
Pyelitis	...	...	...	...	...	1 „
Epilepsy	...	...	...	...	...	1 „
Conjunctivitis	...	...	...	...	...	2 „
Overlaying	...	...	...	...	...	3 „
Meningitis	...	...	...	...	...	2 „
Birth injuries	...	...	...	...	...	2 „
Congenital defect	...	...	...	...	...	2 „
Feebleness	...	...	...	...	...	12 „
Wasting	...	...	...	...	...	44 „

It seems almost certain that these various conditions played a large part in causing the deaths of these infants.

MATERNAL ILLNESS OR DEATH.

The care of the mother is so essential to the wellbeing of the new-born child that it is not surprising that in the following 18 cases the serious illness or death of the mother was followed by the death of the child:—

Tuberculosis	...	...	...	...	2 cases.
Died at birth	...	...	...	...	1 „
Mastitis, operation	...	...	...	...	1 „
Scarlet fever	...	...	...	...	1 „
In asylum	...	...	...	...	2 „
Nervous breakdown	...	...	...	...	2 „
Operation	...	...	...	...	1 „
Inebriety	...	...	...	...	1 „
Rheumatic fever	...	...	...	...	1 „
Vague illness	...	...	...	...	6 „

Such severe illness necessarily involved the weaning of the child.

SOCIAL CONDITIONS.

Seven, at least, of the children were illegitimate, and the babies having been admitted to some institution at an early age had necessarily been weaned for this purpose. In 16 instances of infants who died in institutions the parents could not be traced at the address given.

METHOD OF FEEDING.

The majority of the children were artificially fed in whole or in part. Artificial feeding if not carefully done not only predisposes the child to a fatal infection, rendering it more susceptible, but provides the medium, usually milk, by which the infection is conveyed. Many were breast-fed, the admission to hospital being on account of operation, etc. Divided according to the method of feeding the cases were:—

Entirely breast fed	...	...	...	...	67
Mixed breast fed and artificial	...	...	...	...	15
First breast fed, later artificially	...	...	...	...	102
No history obtainable or inadequate information	...	...	...	...	47
Artificially fed	...	...	...	...	44
Total	...	...	...	...	275

The influence of artificial feeding in the causation of these deaths is manifest. Babies should not be weaned during the season of the year when diarrhœa is prevalent—July to October—if this can be avoided.

TABLE IV.

DIARRHOEA AND ENTERITIS (under 2 years of age), 1925-1931

DEATH-RATE PER 1000 BIRTHS REGISTERED DURING THE YEAR OF OBSERVATION AND THE PRECEDING YEAR. DEATHS IN INSTITUTIONS ARE ALL REFERRED TO THE DISTRICT OF RESIDENCE.

District.	1925	1926	1927	1928	1929	1930	1931
Exchange ...	31·1	29·4	17·7	16·5	17·3	12·3	9·5
Abercromby ...	14·5	12·7	11·8	10·9	21·8	7·4	12·6
Everton ...	8·8	13·4	10·9	9·3	12·9	6·6	8·1
Kirkdale ...	11·3	13·4	11·1	9·9	10·0	10·5	4·1
Edge Hill ...	6·8	9·9	5·5	6·5	5·4	6·2	4·6
Toxteth ...	9·5	9·9	7·4	7·5	6·9	5·9	6·1
Walton ...	3·8	14·0	6·4	6·2	8·2	3·4	6·9
West Derby ...	3·5	6·0	4·3	11·4	12·9	7·4	6·0
Wavertree ...	5·0	6·4	4·1	5·8	5·0	6·8	6·0
Fazakerley ...	4·3	9·1	5·0	0·0	1·7	3·9	5·6
Woolton ...	15·2	30·9	6·3	15·5	9·0	11·3	26·4
WHOLE CITY	10·3	13·3	9·9	9·9	10·3	7·2	7·2
BIRTH RATE	23·6	23·7	22·7	22·6	22·2	22·1	21·7

TABLE V.

DEATHS FROM DIARRHŒA AND ENTERITIS
(UNDER TWO YEARS).

DISTRICTS.	QUARTERS.								YEAR 1931.		
	March.		June.		Sept.		Dec.				
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Total
Exchange	6	5	5	4	11	7	8	2	30	18	48
Abercromby	4	1	6	2	6	2	1	2	17	7	24
Everton	5	6	6	2	8	4	10	3	29	15	44
Kirkdale	2	...	2	...	4	1	3	...	11	1	12
Edge Hill	3	...	5	1	3	2	4	...	15	3	18
Toxteth	9	9	...	4	7	2	4	2	20	17	37
Walton	5	1	1	3	6	1	2	...	14	5	19
West Derby	3	5	4	1	6	2	4	4	17	12	29
Wavertree	1	6	1	1	3	2	3	2	8	11	19
Fazakerley	4	1	1	2	4	...	2	2	11	5	16
Woolton	...	1	...	...	...	...	4	...	4	1	5
City	42	35	31	20	58	23	45	17	176	95	271

AGES AT DEATH.

Under 1 year	...	...	...	...	...	...	234
1 to 2 years	...	...	...	...	...	...	37
TOTAL	...	...	...	...	...	...	271

DEATHS FROM DIARRHOEA AND ENTERITIS SEPARATELY.

	QUARTERS.				YEAR.
	1ST.	2ND.	3RD.	4TH.	
Diarrhœa	3	8	8	3	22
Enteritis	74	43	73	59	249
Total	77	51	81	62	271

N.B.—Deaths in public institutions are transferred to the districts from which the patients came.

MODE OF INFECTION.

It seems probable that about half the deaths included under the heading diarrhœa and enteritis were from an acute or sub-acute primary infection of the stomach and bowels. The sickness in older children and adults is, however, often of a trivial character and liable to be overlooked.

The cases are notably more prevalent in the central portions of the town, more especially in the Exchange registration district, as will be seen by reference to Table IV. Some parts of the city escape almost entirely from this disease. The consistent efforts to reduce the mortality have not, however, been without effect, and the rates recorded in 1930 Abercromby (12·6) and for Exchange (9·5), are less than that recorded for the whole city (14·6) in 1921. The annual increase in the late summer and autumn coincides with the hottest part of the year, and whilst climatic changes and alterations in the character of the artificial food given to the infant undoubtedly predispose to the infection there can be little doubt that the seasonal increase of infection is mainly an increased carriage of infection by flies. The fatal issue was, however, predisposed, in a large number of cases, by the various diseases and causes of ill-health set forth in preceding paragraphs.

Enquiries were made in all fatal cases as to the prevalence of flies in the home at the time of onset of illness. For a number of years, wherever an excessive prevalence of flies is reported, this is referred to the sanitary department for investigation. During 1931 this factor appeared to have been very largely eliminated as there was scarcely any rise in the gastro-intestinal mortality in the third quarter of the year.

The experience of previous years points strongly to the importance of flies as carriers of infection and that collections of stable manure form the most important breeding places for these insects. Regular visits of inspection are paid to stables and the occupiers are informed as to the desirability of regular weekly removals of manure (see page 190). The following notice has been issued to the owners of stables in recent years with the object of securing the frequent removal of manure from the latter:—

NOTICE.**REMOVAL OF MANURE FROM STABLES.**

The Health Committee is very desirous that Manure from Stables should be removed with as little delay as possible, and with this object in view, arrangements have been made with the City Engineer for its speedy removal.

On application to the City Engineer, Municipal Offices, Dale Street, Manure will be removed from stable yards as often as required, free of charge.

INFECTIOUS DISEASES IN SCHOOLS.

The usual infectious diseases were slightly less prevalent during the year, 7,852 cases of children of school age being reported, as against 10,832, 8,750, 9,876, 10,128, and 8,921 for the years 1926 to 1930 respectively. Compared with the last year there was a decrease in the number of cases of diphtheria, scarlet fever, measles and chicken-pox, but an increase in the number of cases of whooping cough and mumps.

Diphtheria continued to be prevalent during 1931. Numerous visits to schools were paid, and swabs were taken from 984 children for the detection of carrier cases. Of these 45, or 4.6 per cent., were positive, and these children were excluded until they ceased to be infectious.

Infants' departments were wholly or partially closed in nine instances for measles, because of the simultaneous prevalence of measles and influenza, in seven for influenza, and in two instances for influenza and whooping cough.

The following tables show the number of cases of the common infectious diseases with the ages of children affected and the monthly distribution of the cases:—

SCHOOL CASES OF INFECTIOUS DISEASE DURING 1931.

SCHOOL CASES.		AGE DISTRIBUTION.											
Disease.	under 5	under 6	under 7	Total under 7	under 8	under 9	under 10	under 11	under 12	under 13	Over 14	Total 7 and over	Grand total.
Diphtheria ...	22	233	279	534	219	208	195	187	122	84	57	1,100	1,634
Scarlet fever ...	23	118	114	255	110	79	76	56	52	21	29	437	692
Measles ...	119	905	694	1,718	406	109	70	46	28	18	10	692	2,410
Whooping cough ...	69	663	365	1,097	94	46	14	6	1	7	2	171	1,268
Mumps ...	35	260	241	536	169	98	46	38	21	15	8	395	931
Chicken pox ...	24	292	247	563	159	73	38	30	27	14	9	354	917
Totals	292	2,471	1,940	4,703	1,157	613	439	363	251	159	115	3,149	7,852

SCHOOL CASES.		MONTHLY DISTRIBUTION.											
Disease.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Totals.
Diphtheria ...	130	141	124	146	123	147	96	96	158	177	167	129	1,634
Scarlet fever ...	53	50	43	44	50	49	27	51	78	96	79	72	692
Measles ...	585	627	429	290	136	140	73	12	14	36	22	46	2,410
Whooping cough ...	50	83	113	100	114	218	29	99	67	104	211	80	1,268
Mumps ...	9	20	41	93	128	160	19	24	69	114	161	79	917
Chicken pox ...	67	40	30	65	114	136	49	30	78	131	118	73	931
Totals	894	961	780	738	665	850	293	312	464	658	758	479	7,852

PUBLIC ELEMENTARY SCHOOLS.

	<u>1931.</u>
Number of visits to schools	3,778
„ found incorrect	19
„ notices issued to remedy defects ...	19

NOTICES TO SCHOOL TEACHERS.

The arrangements made with the Education Committee have been continued, viz., that notice shall be sent to the Education Department and postcards to the head teachers of the various schools, giving information as to children from infected houses attending at the schools; 8,235 of these cards were sent during the year, as against 8,917 in the preceding year.

CO-OPERATION WITH EDUCATION DEPARTMENT.

References from Education Department ...	5,469
References to Education Department ...	18,770
School cases investigated or followed up ..	7,527

PUBLIC ELEMENTARY SCHOOLS

1921	Number of visits to schools
6,778	
10	found located
10	notices found to family districts

NOTICES TO SCHOOL TEACHERS

The arrangements made with the Education Committee have been continued, viz., that notice shall be sent to the Education Department and postcards to the head teachers of the various schools, giving information as to children from infected houses attending at the schools. 2,521 of these cards were sent during the year, as against 2,911 in the preceding year.

CO-OPERATION WITH EDUCATION DEPARTMENT

Letters from Education Department	2,521
Letters to Education Department	14,700
School cases investigated or inspected	1,700

MATERNITY AND CHILD WELFARE

The maternity and child welfare work in this city is very comprehensive and has been carried out throughout the year 1931 with very gratifying results. The whole scheme is designed to secure maternal and child health, maternity and child welfare and only the fundamental departmental action of all officials engaged in it, but also the co-operation of all health services with all voluntary agencies, medical and social, whose efforts are directed towards the same objective.

The maternity and child welfare scheme operating in this city is given in outline in the following pages.

MATERNITY AND CHILD WELFARE.

- (1) The departmental action for inspection of registers, records and equipment, under the Maternity and Child Welfare Act, 1931, is carried out by the Maternity and Child Welfare Officer, who is assisted by the Maternity and Child Welfare Inspectors.
- (2) Medical assistance sought by midwives (Central Midwives Board) is carried out by the Maternity and Child Welfare Officer, who is assisted by the Maternity and Child Welfare Inspectors.
- (3) The departmental action for the registration of midwives, under the Maternity and Child Welfare Act, 1931, is carried out by the Maternity and Child Welfare Officer, who is assisted by the Maternity and Child Welfare Inspectors.
- (4) The departmental action for the registration of midwives, under the Maternity and Child Welfare Act, 1931, is carried out by the Maternity and Child Welfare Officer, who is assisted by the Maternity and Child Welfare Inspectors.
- (5) The departmental action for the registration of midwives, under the Maternity and Child Welfare Act, 1931, is carried out by the Maternity and Child Welfare Officer, who is assisted by the Maternity and Child Welfare Inspectors.
- (6) The departmental action for the registration of midwives, under the Maternity and Child Welfare Act, 1931, is carried out by the Maternity and Child Welfare Officer, who is assisted by the Maternity and Child Welfare Inspectors.
- (7) The departmental action for the registration of midwives, under the Maternity and Child Welfare Act, 1931, is carried out by the Maternity and Child Welfare Officer, who is assisted by the Maternity and Child Welfare Inspectors.
- (8) The departmental action for the registration of midwives, under the Maternity and Child Welfare Act, 1931, is carried out by the Maternity and Child Welfare Officer, who is assisted by the Maternity and Child Welfare Inspectors.
- (9) The departmental action for the registration of midwives, under the Maternity and Child Welfare Act, 1931, is carried out by the Maternity and Child Welfare Officer, who is assisted by the Maternity and Child Welfare Inspectors.
- (10) The departmental action for the registration of midwives, under the Maternity and Child Welfare Act, 1931, is carried out by the Maternity and Child Welfare Officer, who is assisted by the Maternity and Child Welfare Inspectors.

1932.

(11) The departmental action for the registration of midwives, under the Maternity and Child Welfare Act, 1931, is carried out by the Maternity and Child Welfare Officer, who is assisted by the Maternity and Child Welfare Inspectors.

MATERNITY and CHILD WELFARE.

The maternity and child welfare work in this city is very comprehensive and has been carried out throughout the year 1931 with very gratifying results. The whole scheme is designed to reduce maternal and infantile mortality and morbidity, and entails not only the harmonious and co-ordinated action of all officially engaged in it, but also active co-operation of public health services with all voluntary agencies, medical and social, whose efforts are directed towards the same objective.

The maternity and child welfare scheme operative in this city is given in outline in the following pages.

THE MIDWIFERY DEPARTMENT.

In this are included :—

- (i) The quarterly routine visiting of midwives in their own homes for inspection of registers, records and equipment, under the Central Midwives' Board Rules.
- ii. The investigation of all cases of :—
 - (a) Medical assistance sought by midwives (Central Midwives' Board Rules).
 - (b) Puerperal Pyrexia and Puerperal Fever, under the Public Health (Notification of Puerperal Fever and Puerperal Pyrexia) Regulations, 1926.
 - (c) Claims for fees in indigent cases, under section 14 of the Midwives Act, 1918.
 - (d) Claims from midwives suspended so as to prevent the spread of infection (Midwives and Maternity Homes Act, 1926).
 - (e) Maternal deaths (for Ministry of Health Maternal Mortality Committee).

(f) Ophthalmia Neonatorum, and the giving of treatment where required (under Ophthalmia Neonatorum Regulations, 1926).

(g) Premises intended to be used as nursing homes (under Nursing Homes Registration Act, 1927).

iii. The visiting of Lying-in Homes (registered under the Liverpool Corporation Act, 1921, and Midwives and Maternity Homes Act, 1926), also visiting of Nursing Homes (under Nursing Homes Registration Act, 1927).

iv. Any other enquiries, investigations or advice relative to the practice of midwives in the city.

MIDWIFERY DEPARTMENT.

As has been indicated in the above outline, the work of this department is based upon certain rules of the Central Midwives Board, and certain Acts and Regulations of the Ministry of Health.

During the year 1931, 280 midwives gave the required notice under section 10 of the Midwives Act, 1902, of their intention to practise midwifery in this city.

A total of 11,750 births (11,428 live births and 322 still births) were attended by these midwives during the year. This total included 1,540 live births and 33 still births attended by the midwives employed in the four District Homes belonging to the Liverpool Maternity Hospital. The total number of births attended by the midwives of Liverpool was 61·2 per cent. of the total births notified in the city. So far as can be ascertained, no birth was attended during the year by an uncertified woman.

The total number of births which took place in institutions during the year was 5,717 (5,357 live births, 360 still-births):—

STATEMENT OF NOTIFICATIONS OF LIVE BIRTHS RECEIVED DURING THE YEARS 1927 TO 1931.

	1927.		1928.		1929.		1930.		1931.			
Notifications Received from	Births.	Percentage of Births Registered in the City.	Births.	Percentage of Births Registered in the City.	Births.	Percentage of Births Registered in the City.	Births.	Percentage of Births Registered in the City.	Births.	Percentage of Births Registered in the City.		
Certified Midwives	11,647	61.23	11,389	59.6	10,898	57.7	10,486	55.54	9,888	53.09		
Medical Attendants.....	1,690	8.88	1,723	9.0	1,743	9.23	1,759	9.32	1,658	8.90		
Transferred Institutions	1,849	9.72	2,233	11.7	2,531	13.40	2,883	15.27	3,316	17.80		
Liverpool Maternity Hospital	1,075	5.65	1,067	5.6	1,042	5.51	1,032	5.46	1,315	7.06		
" Rest Home," Chatham St...	289	1.52	269	1.4	268	1.42	277	1.47	269	1.44		
District Homes	1,453	7.64	1,479	7.7	1,476	7.88	1,551	8.21	1,540	8.27		
Royal Infirmary	279	1.52	291	1.58	371	2.00	457	2.42	432	2.32		
Other Institutions	31	0.07	32	0.08	29	0.16	28	0.15	25	0.13		
Parents	3	0.02	2	0.01	3	0.02	—	—	3	0.02		
	18,316	96.29	18,485	96.68	18,361	97.3	18,473	97.8	18,446	99.03		
Total number of births registered in the City	} 1927 1928		} 19,020 19,120		} 1929 1930		} 18,888 18,881		} 1931 —		} 18,626	

ROUTINE VISITS TO MIDWIVES.

Rule 25 laid down by the Central Midwives Board states :—

“ The Local Supervising Authority shall make arrangements to
“ secure a proper inspection of the register of cases, bag of
“ appliances, etc., of every midwife practising in the district of
“ such authority, and when thought necessary, an inspection of
“ her place of residence, and an investigation of her mode of
“ practice.

For this purpose three fully trained health visitors have been appointed, who hold the certificate of the Central Midwives Board. During the year, 2,040 visits were paid to the homes of practising midwives for the purpose of inspection, and for special enquiries relating to their work.

The operation of the Notification of Births Extension Act, 1915, which renders it obligatory on the part of the medical attendant or midwife, as well as on the father of the child, to notify the occurrence of a birth, has been a very valuable aid to the working of the Midwives Act.

MEDICAL ASSISTANCE.

Under the rules issued by the Central Midwives Board, a midwife must advise that medical assistance shall be called in where there is any abnormal circumstance connected with the confinement.

Among the midwives' cases during the year there were 66 difficult labours where the child was stillborn, which were attended by medical practitioners called in under these rules.

The following table gives the details of the complications for which medical aid was advised by midwives, the total number of medical records being 3,316.

MOTHER—

Obstructed labour, uterine inertia or requiring instrumental assistance	...	...	...	...	...	...	...	573
Ruptured perinæum	...	...	...	...	...	...	...	510
Ante-partum hæmorrhage	...	...	...	...	...	...	...	213
Pyrexia	...	...	...	...	...	...	...	152
Carried forward								1,448

	Brought forward	...	1,448
Ante-natal treatment	...	...	151
Abortion or miscarriage	...	...	162
Post-partum hæmorrhage	...	...	103
Retained placenta or membranes	...	...	72
Varicose veins	...	...	43
Premature birth	...	...	6
Multiple births	...	...	16
Eclampsia	...	...	6
Deformed pelvis	...	...	8
Influenza	...	...	7
Abnormal presentation :			
Breech presentation	...	...	59
Occipito-posterior position	...	...	44
Cord presentation	...	...	18
Foot presentation	...	...	8
Brow or face presentation	...	...	17
Transverse presentation	...	...	9
Placenta prævia	...	...	10
Various	...	...	252
CHILD—			
Feebleness and prematurity	...	...	249
Ophthalmia	...	...	351
Skin eruption	...	...	64
Malformation	...	...	51
Convulsions	...	...	31
Injury at birth	...	...	5
Other conditions in child	...	...	126
			3,316

STILL-BIRTHS.

The number of still-births notified during 1931 was 748, of which number 322 were notified by midwives, being at the rate of 2·7 per cent. of the births attended by them.

A midwife does not give a certificate of still-birth unless she is present at the time of birth; she is instructed that if the birth should take place before her arrival she must report the matter to the Coroner, who, after enquiry, grants a certificate for the burial of the body.

Enquiries were made into the circumstances of these still-births, and the following are the figures relating to the months of pregnancy during which the still-births took place:—

Sixth month	...	...	...	...	5
Seventh month	...	...	...	...	63
Eighth month	...	...	...	...	72
Ninth month	...	...	...	...	182
					322

The number of visits paid with reference to still-births was 816.

Table shewing results of examination of still-births during the last 10 years for evidence of syphilitic infection.

Year.	Examined.	Positive.	Percentage.
1922	488	30	7.0
1923	408	33	8.0
1924	398	26	6.0
1925	346	15	4.0
1926	347	13	4.0
1927	297	12	4.0
1928	269	2	0.74
1929	149	3	2.0
1930	85	—	—
1931	46	—	—

PUBLIC HEALTH (NOTIFICATION OF PUERPERAL FEVER AND PUERPERAL PYREXIA) REGULATIONS, 1926.

These regulations, which came into force on October 1st, 1926, require the notification to the Medical Officer of Health of any febrile condition occurring in a woman within 21 days after childbirth or miscarriage, in which a temperature of 100.4° Fahrenheit or more has been sustained during a period of 24 hours or has recurred during that period. Puerperal fever was, and still continues to be, notifiable under the Infectious Diseases (Notification) Act, 1889, to which the above regulations are supplementary.

With the object of securing adequate treatment in the early stages of this somewhat ill-defined condition, the prescribed notification form provides that the medical attendant can ask for (1) a second opinion

on the case, (2) certain bacteriological examinations, (3) admission of the patient to hospital or (4) the provision of trained nurses; or, alternately, state that facilities for all necessary treatment exist.

The necessary facilities to meet these requisitions have been provided by the Health Committee as follows:—The services of consultant obstetricians are available when considered necessary by the medical officer. Hospital accommodation has for some years been provided, formerly in the city hospital, Fazakerley, and latterly in Walton and Smithdown Road Hospitals, and Mill Road Infirmary. Arrangements have been made by which the services of the nurses of the Queen Victoria District Nursing Association are available.

The number of cases of puerperal pyrexia notified during the year was 178. Of these 14 were found to be puerperal septicæmia, and therefore fall within the definition of puerperal fever. Four were cases of influenza, one was a case of pneumonia, one of erysipelas, one of bronchitis, and one of acute suppurative otitis media. The remaining 156 were cases of pyrexia of puerperal origin of a lesser degree than is termed puerperal fever. Of these cases 129 were admitted to or occurred in hospitals, and 37 were attended by midwives. In nine cases a consultant obstetrician was called in, and in six cases nurses were provided. The number of puerperal pyrexia cases notified from Institutions where the patient resided outside the city was eight.

PUERPERAL FEVER.

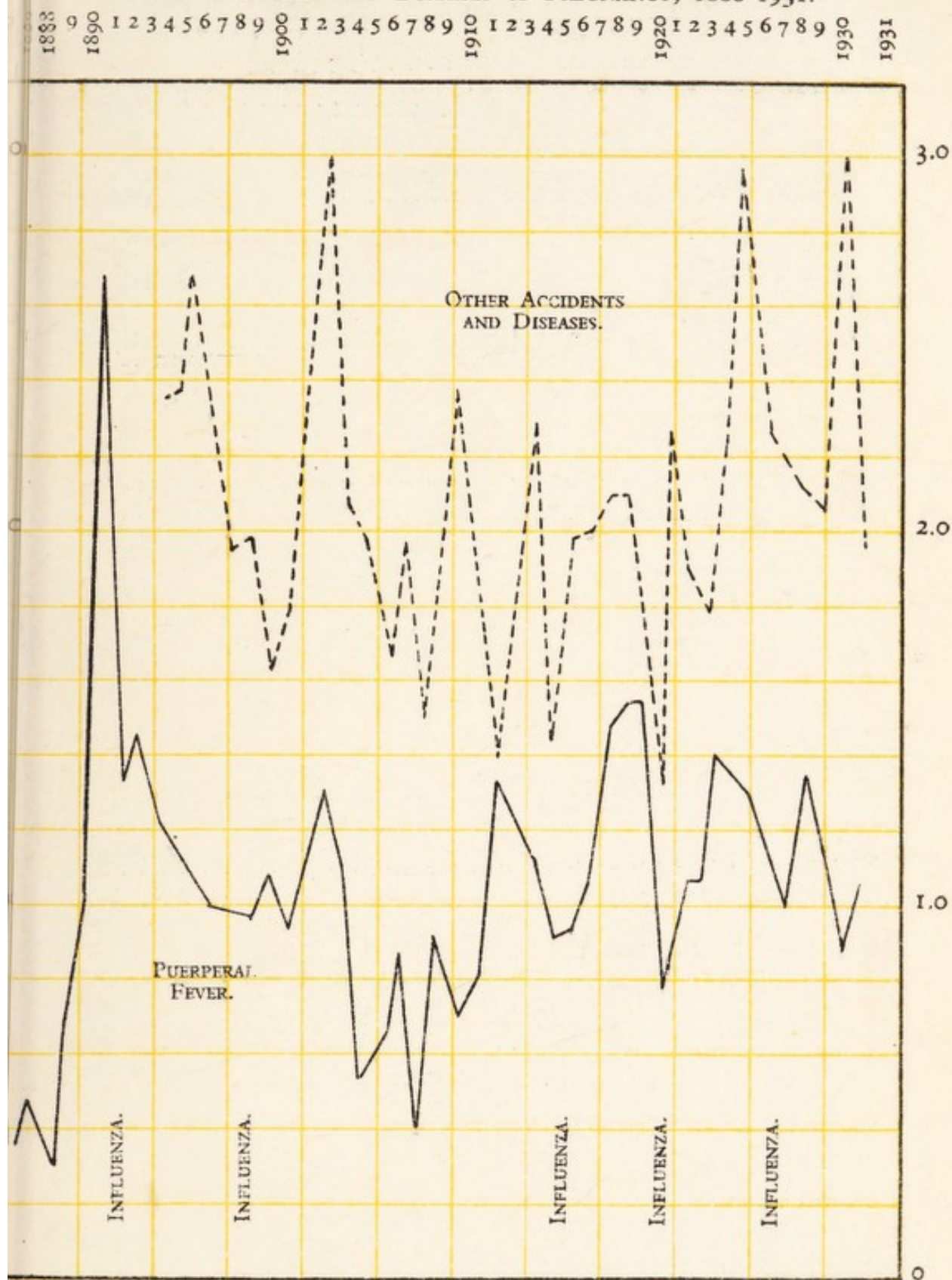
The number of cases of puerperal fever notified to the Medical Officer of Health during the year was 54, of which 20 proved fatal. This gives a puerperal fever death rate of 1·07 per 1,000 live births in the city.

The total number of deaths from other puerperal causes which occurred during the year was 35, equal to a death rate of 1·87 per 1,000 births. The maternal death rate was therefore 2·9.

Forty-five cases of puerperal fever were admitted to or occurred in hospital, viz.:—6 Mill Road Infirmary, 29 Walton Hospital, 7 Smithdown Road Hospital, 1 Royal Infirmary, 2 Maternity Hospital. After the usual enquiries were made, 38 cases (of which 12 died) were found to have occurred in the practice of midwives.

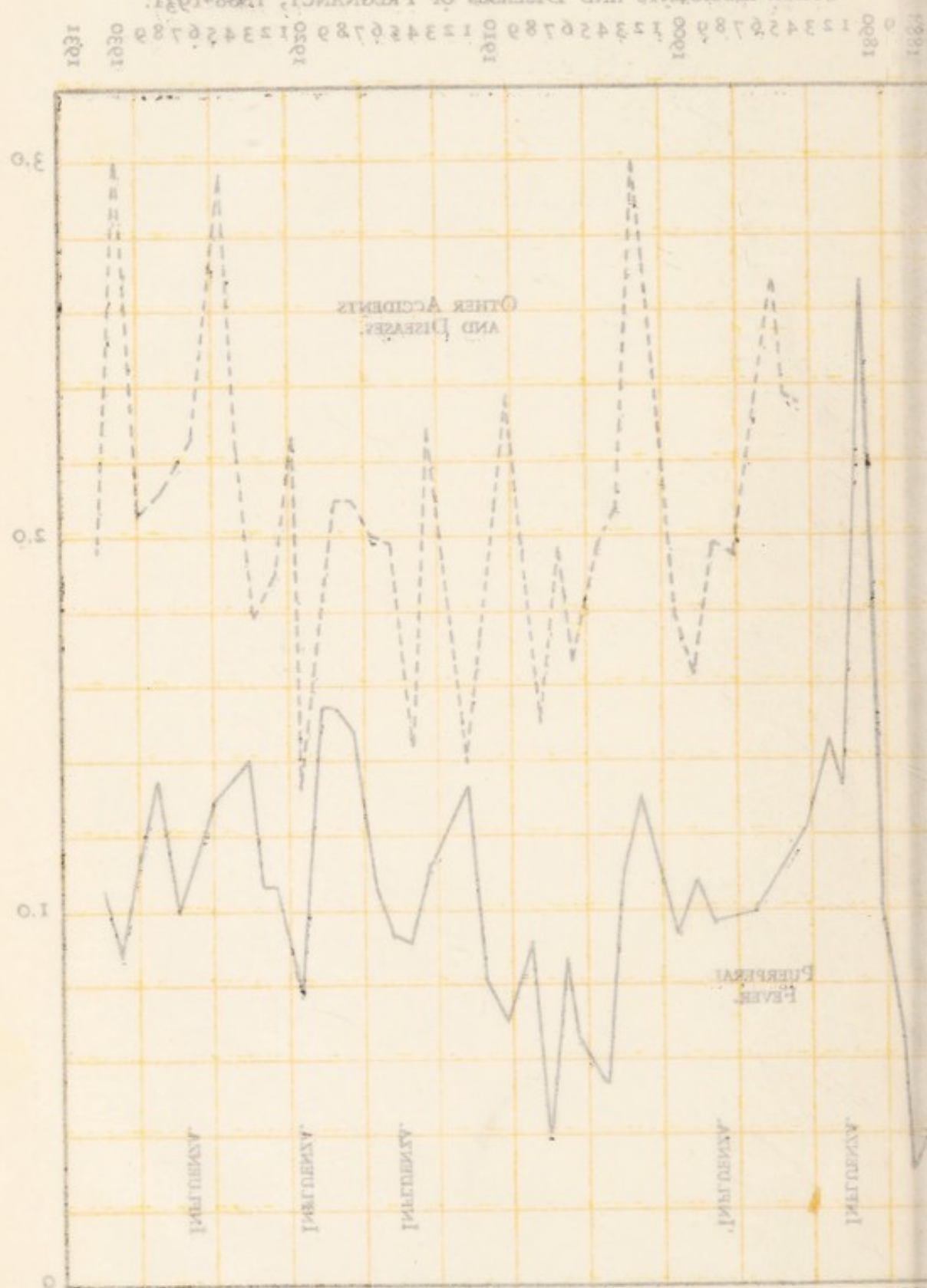
CITY OF LIVERPOOL.

MORTALITY PER 1000 BIRTHS FROM PUERPERAL FEVER AND
OTHER ACCIDENTS AND DISEASES OF PREGNANCY, 1888-1931.



CITY OF LIVERPOOL

MORTALITY PER 1000 BIRTHS FROM PUERPERAL FEVER AND
OTHER ACCIDENTS AND DISEASES OF PREGNANCY, 1888-1931.



DEATHS AND DEATH RATES FROM PUERPERAL FEVER AND OTHER PUERPERAL
CAUSES, TOGETHER WITH MATERNAL DEATH RATES, DURING THE
YEARS 1911 TO 1931.

Year.	Total number of births in the City.	Deaths from Puerperal Fever.	Death rate per 1,000 births.	Deaths from Other Diseases and Accidents of Pregnancy	Death Rates per 1,000 births.	Maternal Death Rate. per 1000 births
1911	22,493	21	0.93	47	2.1	3.0
1912	22,233	15	0.68	53	2.4	3.1
1913	22,555	18	0.80	42	1.8	2.6
1914	23,065	31	1.34	31	1.3	2.6
1915	21,586	27	1.25	41	1.9	3.2
1916	20,679	22	1.06	48	2.3	3.4
1917	17,906	16	0.90	25	1.4	2.3
1918	17,133	16	0.93	35	2.0	2.9
1919	18,694	20	1.07	38	2.0	3.1
1920	25,039	36	1.49	54	2.1	3.6
1921	21,904	34	1.55	46	2.1	3.6
1922	21,467	33	1.54	28	1.3	2.8
1923	20,695	16	0.77	47	2.3	3.0
1924	20,559	22	1.07	39	1.9	3.0
1925	19,592	21	1.07	36	1.8	2.9
1926	19,792	28	1.41	43	2.2	3.6
1927	19,020	25	1.31	58	3.0	4.3
1928	19,120	19	0.99	45	2.4	3.4
1929	18,888	26	1.37	40	2.1	3.5
1930	18,881	16	0.85	59	3.1	3.9
1931	18,626	20	1.07	35	1.9	2.9

CLAIMS FOR FEES IN EMERGENCY CASES.

1. PAYMENT OF FEES FOR MEDICAL ASSISTANCE.

Payment may be made by Local Supervising Authorities to medical practitioners called in by midwives under section 14 of the Midwives Act, 1918. During the year 3,459 accounts were investigated.

The applicant is assessed on a scale of income, due consideration being given to cases where any special expenditure has been incurred in the interests of the mother or child. The whole or part of the doctor's fee is paid in almost all cases by the Health Committee.

2. PROVISION OF AND PAYMENT OF CONSULTANTS.

Public Health (Notification of Puerperal Fever and Puerperal Pyrexia) Regulations, 1926.

As stated in the section of this report dealing with Puerperal Pyrexia, the services of consultant obstetricians are available if required by a general medical practitioner.

During the year the services of a consultant was requisitioned in nine cases.

The ability of the patient to pay is investigated, but in each of these cases, the whole fee was defrayed by the Health Committee.

3. PAYMENTS TO MIDWIVES ON BEHALF OF NECESSITOUS PATIENTS.

Many women find themselves unable to meet the expense of a midwife's attendance either on account of not being eligible to receive maternity benefit or on account of special expenses necessitated at the time of confinement. In such cases the Health Committee pays a large proportion of the midwife's fee.

During 1931, 297 claims from midwives for necessitous midwifery were investigated and paid.

4. CLAIMS FROM MIDWIVES WHO WERE SUSPENDED FROM PRACTICE.

Section 2 (1) Midwives and Maternity Homes Act, 1926, gives a midwife who is suspended from practice (not herself being in default) in order to prevent the spread of infection, a right to recover reasonable compensation from the Local Authority. Three claims under this section were paid by the Health Committee during 1931 :—

Contact with a case of diphtheria	1
„ „ „ epidemic pemphigus	1
Case of a septic thumb	1

ENQUIRIES INTO MATERNAL DEATHS.

Towards the end of 1928, a new form of enquiry was issued by the Ministry of Health Maternal Mortality Committee, on which information with regard to every maternal death is collected from doctors, hospitals, midwives and health visitors, and forwarded to the Ministry of Health.

As a result of these enquiries it was found that 97 deaths have occurred owing to pregnancy, child birth or associated or concurrent diseases, such as heart disease, pneumonia or tuberculosis. It is presumed that many of these deaths were inevitable and would have occurred whether the mother had been pregnant or not, but whether the pregnancy or labour have added to the strain of the concurrent illness and brought it to a fatal termination sooner than might have occurred otherwise it is impossible to determine. It is not improbable that during the period reviewed in the table, there has been an

increasing accuracy in the certification and allocation of maternal deaths, so that deaths which in former years were classified under other headings are now allocated as maternal deaths.

SPECIAL INVESTIGATION OF THE 97 DEATHS ASSOCIATED
WITH PREGNANCY OR CHILDBIRTH DURING 1931.

	Causes.	No. of Deaths.	Remarks.
1	Puerperal Septic Conditions	21	Of this number, one death is also classified under "Haemorrhage" and another in the "Cardiac" group.
2	Haemorrhage	20	Of these, one death is included in the "Puerperal Septic Conditions" group.
3	Cardiac Disease	19	Of these, one death is included in the "Puerperal Septic Conditions" group, one in the "Toxaemia" group, and another in the "Haemorrhage" group.
4	Toxaemia	13	
5	Pneumonia	11	
6	Pulmonary Tuberculosis ...	6	
7	Pulmonary Embolism ...	2	
8	Ectopic	2	
9	Shock	3	
10	Unclassified	6	
		103	
	Less	6	Duplicate causes, classified in more than one group as enumerated above.
	TOTAL ...	97	Deaths.

PUERPERAL SEPTIC CONDITIONS.

Reg. No.	Age.	Married	Number of Pregnancies.	Home Conditions.	General Health.	Ante-natal Supervision.	Abnormalities and Complications.
15	28	Married	2nd	Slum	Poor	Satisfactory	Slight degree Pelvic contraction. Trauma. Forceps.
18	24	"	1st	Fair	Good	Inadequate	Trauma.
31	35	"	8th	Slum	Poor	Satisfactory	Disproportion, Cardiac disease, Cervical infection. Caesarian Section.
33	43	"	1st	Poor	Poor	Satisfactory	Incomplete abortion.
35	32	"	5th	Very Poor	Fair	Nil	Influenza. Puerperal mania.
42	36	"	2nd	Poor	Fair	Satisfactory	Failed forceps. Craniotomy.
44	23	"	3rd	Poor	Very Poor	Nil	Anaemic and emaciated patient.
47	31	"	1st	Corp. House	Poor	Satisfactory	Appendicitis: Forceps.
48	38	"	3rd	Corp. House	Good	Inadequate	? Auto-infection.
50	27	"	3rd	Poor	Fair	Nil	Previous attack of Septicaemia.
54	34	"	4th	Very dirty	Fair	Inadequate	Piece of placenta retained.
55	42	"	7th	Slum	Poor	Inadequate	Obstructed labour. Failed forceps. Embryotomy.
56	31	"	3rd	Fair	Fair	Nil	Pelvic Cellulitis and Pyelitis.
57	23	"	2nd	Poor	Poor	Inadequate	General peritonitis, incomplete abortion and mitral regurgitation.
66	32	"	5th	Poor	Fair	Inadequate	Pyelitis and infective endocarditis.
69	28	"	5th	Slum	Fair	Inadequate	Septic pneumonia, general peritonitis, appendicitis and miscarriage.
80	42	"	9th	Poor	Poor	Inadequate	Acute ante-partum haemorrhage, puerperal endometritis and general peritonitis.
86	31	"	9th	Slum	Poor	Nil	Ailing, over-worked and under-fed.
88	34	"	13th	Slum	Poor	Satisfactory	Ailing for years. Haemorrhage. Retroperitoneal abscess.
89	37	"	4th	Poor	Fair	Inadequate	Very poor health.
92	23	"	1st	Poor	Poor	Satisfactory	Influenza.
							Ailing.

In this group of 21 cases, only one patient had good health and it will be noticed that two-thirds had either inadequate or no ante-natal care.

Reg. No.	Age.		Number of Pregnancies.	Home Conditions.	General Health.	Ante-natal Supervision.	Complications.
4	26	Married	1st	Poor	Good	Satisfactory	Post-partum Haemorrhage. Died in $\frac{3}{4}$ hour.
6	37	"	6th	Slum	Poor	Nil	Adherent placenta. Post-partum Haemorrhage in previous confinements. Died in 3 hours.
7	38	Single	2nd	Poor	Poor	Nil	Post-partum Haemorrhage. Died in $2\frac{1}{4}$ hours.
24	29	Married	1st	Fair	Fair	Satisfactory	Placenta praevia—ante-partum haemorrhage. Version. Died $2\frac{1}{2}$ hours later.
32	34	"	8th	Slum	Poor	Inadequate	Fibroid uterus. Post-partum Haemorrhage—acute shock. Died in $\frac{1}{4}$ -hour.
46	24	"	8th	Slum	Poor	Inadequate	Concealed accidental haemorrhage.
54	34	"	4th	Very dirty	Good	Inadequate	Severe ante-partum haemorrhage. Placenta fibrotic.
59	42	"	17th	Slum	Poor	Inadequate	Concealed accidental haemorrhage. Died in 4 hours.
61	20	"	1st	Fair	Poor	Nil	Adherent placenta. Post-partum haemorrhage. Died in $5\frac{1}{2}$ hours.
65	22	"	1st	Slum	Fair	Inadequate	Failed forceps. Ruptured uterus. Haemorrhage and shock.
67	36	"	1st	Fair	Fair	Inadequate	Concealed accidental haemorrhage. Albuminuria.
69	28	"	5th	Slum	Fair	Inadequate	Acute ante-partum haemorrhage. Puerperal endometritis and general peritonitis.
72	36	"	13th	Slum	Poor	Nil	Rupture of uterus due to weakened and diseased uterine wall. Died in 6 hours.
75	36	"	3rd	Poor	Good	Satisfactory	Uterus ruptured through old scar from previous Caesarian Section.
77	32	"	1st	Poor	Poor	Satisfactory	Uterus ruptured through myomectomy scar.
78	29	"	5th	Fair	Poor	Nil	Post-partum haemorrhage due to partially adherent placenta. Died in $\frac{1}{2}$ hour.
82	34	"	8th	Poor	Poor	Satisfactory	Placenta praevia. Haemorrhage in previous confinements.
84	23	"	1st	Fair	Poor	Nil	Partially retained placenta. Cardiac disease.
85	42	"	6th	Fair	Poor	Satisfactory	Extreme emaciation of patient—lack of nourishment. Ruptured uterus.
91	36	"	9th	Slum	Poor	Satisfactory	Concealed accidental haemorrhage. Partially adherent placenta. Hydro-nephrosis.

In this group of 20 cases, 6 received no ante-natal supervision and 7 received inadequate ante-natal supervision. Six patients died undelivered, two aborted, eight had still-births, one had a premature baby and three had normal babies. The general health of the mothers was poor, only three being normal.
(No. 69 is referred to under "Puerperal Septic Conditions.")

CARDIAC DISEASE.

Reg. No.	Age.		Number of Pregnancies.	General Health.	Home Conditions.	Ante-natal Supervision.	Existing Heart Disease.	Complications.
3	25	married	4th	Poor	Slum	Inadequate	Mitral Stenosis.	Broncho-pneumonia.
12	33	"	1st	Very Poor	Poor	Satisfactory	Chronic and acute infective endocarditis.	Terminal pneumonia.
17	25	single	1st	Fair	Poor	Nil	Endocarditis.	Had chorea and rheumatism in childhood.
19	22	married	2nd	Poor	Poor	Satisfactory	Mitral Stenosis.	History of rheumatism. Still-born twins.
25	40	"	8th	Very Poor	Poor	Satisfactory	Nil	Anaemia gravis. Terminal heart failure.
31	25	"	8th	Poor	Slum	Satisfactory	Mitral Stenosis and aortic incompetence.	History of rheumatic fever.
40	30	"	2nd	Poor	Poor	Nil	Valvular disease.	Died undelivered.
45	46	"	14th	Poor	Poor	Satisfactory	Myocarditis.	Cervical infection. Caesarian Section.
58	27	"	1st	Poor	Poor	Satisfactory	Long standing valvular disease.	Caesarian Section for obstruction.
60	28	"	1st	Poor	Fair	Satisfactory	Mitral disease.	Terminal pneumonia.
62	38	"	2nd	Fair	Good	Satisfactory	Nil	Chorea in childhood.
63	42	"	3rd	Poor	Good	Satisfactory	Myocarditis.	Femoral thrombosis, acute cardiac dilation terminally.
68	32	"	2nd	Poor	Fair	Satisfactory	Myocardial degeneration.	Hyperplasia of supra-renals.
74	39	"	2nd	Good	Good	Nil	Fatty degeneration.	Chronic nephritis and albuminuria.
76	19	"	1st	Poor	Poor	Satisfactory	Acute infective endocarditis.	Ectopic gestation. Operation.
83	25	"	1st	Poor	Poor	Nil	Cardiac disease.	Still-born twins. Obstetric shock.
84	23	"	1st	Poor	Fair	Nil	Mitral Stenosis	Pneumonia and cerebral embolus.
90	23	"	6th	Poor	Slum	Nil	Cardiac disease.	Post-partum haemorrhage.
95	24	"	6th	Poor	Poor	Nil	Mitral regurgitation.	Influenza and miscarriage.
								Bronchitis, haemoptosis and albuminuria.

In this group of cases, seven were primiparae, five were pregnant for the second time but of these one died undelivered, one was confined for the third time, one for the fourth, two for the sixth, two for the eighth and one for the fourteenth. In 17 out of 19 cases, there was existing heart disease, and in 7 of these cases, no ante-natal supervision had been received. Six cases resulted in premature birth or miscarriage and only one child was healthy when born.

(No. 91 is referred to under "Puerperal Septic Conditions." No. 68 under "Toxaemia" and No. 84 under "Haemorrhage.")

Reg. No.	Age.	Number of Pregnancies.	Home Conditions.	General Health.	Ante-natal Supervision.	Complications.	Existing Kidney Disease.
13	21	single	Poor	Poor	Nil	Tuberculous Broncho-pneumonia (found on Post Mortem examination) and eclamptic fits.	No
21	28	married	Poor	Fair	Nil	Chill. Eclamptic fits.	No
29	45	"	Very dirty	Poor	Inadequate	Liver Atrophy. Hyperemesis fits.	No
36	20	"	Fair	Poor	Satisfactory	Hyperemesis. Eclamptic fits	Yes
38	18	"	Fair	Good	Satisfactory	Obstructed labour. Eclamptic fits	No
39	30	"	Fair	Good	Nil	Eclamptic fits.	No
49	33	"	Fair	Poor	Nil	Hyperemesis, Albuminuria and Puerperal Mania.	No
64	23	"	Fair	Poor	Inadequate	Hyperemesis.	Yes
68	32	"	Fair	Fair	Satisfactory	Albuminuria of pregnancy. Chronic Nephritis.	Yes
71	37	"	Fair	Poor	Inadequate	Acute Pulmonary Oedema. Chronic Nephritis	Yes
73	43	"	Fair	Poor	Nil	Uræmia and chronic Nephritis	Yes
93	33	"	Fair	Poor	Satisfactory	Uræmia and Anaemia.	Probably Yes
96	40	"	Fair	Poor	Satisfactory	Pyelonephritis, Hyperemesis, Influenza.	Yes

In seven of these 13 cases, there was existing kidney disease, which was aggravated by pregnancy and in these cases, two patients died undelivered, one aborted, two had still-births, one had a feeble child and only one a normal baby. The remaining 6 cases were toxæmias due to pregnancy, two of these died undelivered, one baby was feeble and three were normal.

PNEUMONIA.

Reg. No.	Age.	Number of Pregnancies.	Home Conditions.	General Health.	Ante-natal Supervision.	Complications.
1	36	married	Slum	Very Poor	Nil	Albuminuria.
5	39	"	Very Poor	Very Poor	Inadequate	Ailing for years. Pernicious Anæmia.
11	25	"	Poor	Fair	Nil	Acute pneumonia. 3 children also died.
16	37	"	Good	Fair	Satisfactory	Lung abscess.
20	41	"	Slum	Poor	Nil	Chronic bronchitis and influenza.
22	31	"	Poor	Poor	Nil	Albuminuria. Patient ailing.
30	32	"	Poor	Poor	Satisfactory	Cæsarian section. Pleurisy.
37	34	"	Slum	Poor	Nil	Ailing.
70	26	"	Slum	Fair	Satisfactory	Forceps, operation.
79	31	single	Poor	Fair	Nil	Under nourished—ailing.
87	38	married	Slum	Fair	Nil	Under nourished.

It will be noticed that in no case was the general health of the patient good, but that in each case it was such that with the added strain of pregnancy, the patient was unable to withstand the pneumonic infection. Two of the patients died undelivered, four had premature infants, four babies were delicate and one baby only in this group was strong and healthy at birth.

PULMONARY TUBERCULOSIS.

Reg. No.	Age.	Number of Pregnancies.	Home Conditions.	General Health.	Ante-natal Supervision.	Complications.
8	38	married	Poor	Poor	Nil	Died day after medical attention was summoned.
23	36	"	Fairly good	Fair	Satisfactory	Puerperal mania.
26	41	"	Slum	Poor	Inadequate	Pulmonary Tuberculosis.
81	36	"	Poor	Poor	Inadequate	Acute pneumonic phthisis, chronic fibroid phthisis. Incomplete abortion.
97	37	"	Slum	Poor	Satisfactory	Pulmonary Tuberculosis. died twenty days after delivery.
9	18	"	Poor	Poor	Inadequate	Pulmonary Tuberculosis.

ECTOPIC.

27	38	married	Comfortable	Good	Nil	Ruptured ectopic. Died one day after operation.
74	39	"	Good	Good	Nil	Fatty degeneration of the Heart. Died 5 minutes after operation.

PULMONARY EMBOLISM.

34	32	married	Fairly good	Poor	Nil	Normal labour—Pulmonary embolism. Died 1½ hours after delivery.
53	36	"	Fairly good	Poor	Inadequate	Normal labour—Pulmonary embolism—existing phlebitis—thrombosis veins of leg.

SHOCK.

41	28	married	Poor	Good	Nil	Post-mature foetus. Failed forceps. Shock.
51	27	"	Poor	Poor	Satisfactory	Obstructed labour. Forceps. Acute inversion of uterus.
10	41	"	Good	Poor	Satisfactory	Shock. Cerebral thrombosis. Exhaustion and Secondary Anæmia. Difficult labour. Cholecystitis.

UNCLASSIFIED.

43	22	married	Slum	Good	Satisfactory	Transverse myelitis of spinal cord. Haemorrhage into cord. Pyæmia.
28	31	"	Slum	Poor	Inadequate	Specific myelitis. Died two weeks after labour.
52	19	"	Fair	Poor	Nil	Chorea gravidarum. Induced labour. Died three days later.
2	34	"	Slum	Poor	Nil.	Pernicious Anaemia.
14	38	"	Poor (slum)	Poor	Inadequate	Collapse after confinement—extreme debility.
94	41	"	Poor	Poor	Nil	Chronic Bronchitis—Pulmonary Bronchiectasis.

OPHTHALMIA NEONATORUM.INFLAMMATION IN THE EYES OF THE NEWLY-BORN.

The definition adopted for the purpose of dealing with this disease is that used in the rules issued by the Central Midwives Board, governing the practice of midwives, namely, in the section relating to the child, "Inflammation of, or discharge from, the eyes, however slight." A considerable number of the cases enumerated below are extremely mild, but it is so difficult to draw a line between "slight inflammation" and definite ophthalmia neonatorum that it is considered advisable to include inflammation of all degrees of severity in the term "Ophthalmia Neonatorum."

The following figures give some details as to the source of information and character of the cases dealt with during the year:—

The number of cases brought to the notice of the Department was 718, which consisted of:—

Mild cases	...	...	...	...	...	...	588
Severe cases	...	...	...	...	...	...	130
							718

These cases were dealt with as follows:—

Number treated in their homes by special nurse	...	201
„ attended at hospital as out-patients	...	129
„ admitted to hospital	...	43
„ treated by medical attendants and special nurse	...	126
„ treated by medical attendants alone	...	193
„ treated and cured in hospital	...	20
„ died in hospital	...	6
		718

In addition to the above, 28 cases notified were classified as not cases of ophthalmia neonatorum.

INTERVAL IN DAYS BETWEEN BIRTH AND ONSET OF DISEASE.

Days.	1	2	3	4	5	6	7	8	9	Un-known	10 days and over.	Total.
Notified Cases during 1931	27	59	90	67	57	49	61	69	50	4	185	718

Arrangements have been made with the City Bacteriologist to examine the discharge in every notified case of inflamed eyes in the newly-born. This enables a prompt verification of the disease to be determined.

No. of notifications.	Cases from which specimens were examined by City Bacteriologist and at St. Paul's Hospital.	No. of cases of positive Gonorrhoea.	Percentage to total cases examined.	Percentage to total notifications.
718	80	29	36	4.0

TABLE SHEWING INFECTION OF EYES AT ONSET.

Both eyes.	Right eye.	Left eye.	Not known.	Total.
492	82	95	49	718

The total number of visits and re-visits paid in respect of the above cases was 4,937.

A very important part of the scheme for dealing with this disease is the provision at St. Paul's Eye Hospital of five beds and cots for the reception of infants with their mothers, where the former can be under the immediate care of ophthalmic surgeons and nurses during the acute stage of the disease.

From the statistical table given on page 33 it will be seen that 43 babies were admitted with their mothers.

RESULTS.

Number of cases under treatment 1/1/31	...	...	25
„ „ „ notified during 1931	...	...	718
			743
Number of cases cured	...	...	705
„ died under treatment	...	...	6
„ under treatment 31/12/31	...	...	32
			743

There was no case in which loss of sight occurred.

MILK DEPOTS.

The milk which is supplied from these Centres and Depots consists entirely of Grade A Tuberculin-tested milk.

The total number of persons supplied with milk during the year was 16,189, viz., 4,731 on the books at the beginning of the year, and 11,458 admitted during the year. The supply of milk is given on the presentation by the applicant of a note from a doctor, and in a few instances it was allowed on production of written requests from midwives. The following statement shows the different centres and the number supplied at each, viz. :—

Centres.	Ante-Natal.	Nursing Mothers.	Infants.		Liverpool Child Welfare Association.	Totals.
			Under 1 year of age.	1 to 2 Years of Age.		
Netherfield Road ...	288	653	655	75	303	1,969
Earle Road ...	88	250	397	59	104	898
Park Road ...	348	435	282	77	443	1,585
Boaler Street ...	63	310	418	55	99	945
*St. Anne Street ...	245	640	389	114	261	1,649
Rathbone Road ...	41	114	281	20	29	485
Mill Street ...	78	190	116	26	92	502
Scarisbrick Road ...	145	209	295	42	220	911
Agents ...	101	524	327	178	1,384	2,514
	1,392	3,325	3,160	646	2,935	11,458

*Transferred to Holly Street from 25th September, 1931:

The total quantity of milk supplied during the year was 183,138 gallons, and the bottles prepared reached a total of 749,507. The amount of dried milk supplied was 93,069 10/16th lbs.

Total cases on books, January 1st, 1931	...	...	...	4,731
„ „ admitted during 1931	...	...	...	11,458
Total supplied during 1931	...	...	...	16,189
Remaining on the books at the end of the year	...	...	...	4,638
Quarterly Average—January, February, March	...	...	...	4,631
„ „ April, May, June	...	...	...	4,603
„ „ July, August, September	...	...	...	4,333
„ „ October, November, December	...	...	...	5,021

The highest number supplied with milk at one time was 4,796 during the week ended December 5th.

Since the initiation of the scheme in 1901 down to the end of the year 1931 the number of persons supplied with milk has reached a total of 148,479.

On one day in each week mothers attend at the centre in their district for the purpose of reviewing family circumstances when :—

The supply of milk is continued at the same price.

If the circumstances are improved, the charge is increased.

If the circumstances are worse than when last reviewed, the charge is lowered.

The number of attendances of persons at the centres during the year for advice, and payment for milk, etc., was 24,814.

The usual grant is for a period of 4 or 6 weeks, in exceptional cases 2 or 8 weeks.

The number of visits paid during the year to children in their own homes by the health visitors attached to the centres in order to see that the children were being properly fed and the milk properly used, was 5,281. From time to time information concerning cases is received from the district health visitors and from clinics.

NURSING HOMES.

MIDWIVES AND MATERNITY HOMES ACT, 1926.

NURSING HOMES REGISTRATION ACT, 1927.

During the year four applications for registration were received by the Town Clerk. After careful investigation of the premises and practice of the applicants, three were approved by the Health Committee and registered.

Six registrations were cancelled, in two cases owing to removal, in one case owing to death, and in three cases because the keeper of the Nursing Home desired to give up practice.

Two were cancelled and re-registered at a new address and one certificate was transferred to a new address.

No further exemptions other than those already granted were applied for.

The Nursing Homes on the register at the end of the year numbered 68, the approximate number of beds being 283.

Babies born in Nursing Homes during the year numbered 603 (including eight cases of twin births).

VISITS OF THE STAFF OF THE MIDWIFERY DEPARTMENT TO SPECIAL CASES.

These cases are not classifiable in any of the sections so far considered and include visits to women suffering from venereal disease, visits paid to cases of puerperal pyrexia and puerperal sepsis, visits relating to deaths of infants under 14 days old, cases of weaning, maternal mortality, etc. Such visits during 1931 numbered 838.

TABLE SHEWING CHIEF CAUSES OF DEATHS OF INFANTS DURING THE NEO-NATAL PERIOD (FIRST 28 DAYS AFTER BIRTH).

Cause of Death.	Number aged 7 days and under.	Number aged 1 to 4 weeks.	TOTAL.
Prematurity	296	80	376
Respiratory Diseases	51	32	83
Congenital Malformation	14	15	29
Feebleness at Birth	14	5	19
Convulsions	23	9	32
Intestinal Stenosis	1	2	3
Gastro-Enteritis	1	21	22
Entero-Colitis	—	1	1
Want of Attention at Birth	5	—	10
Found Dead... ..	5		
Melaena	4	—	4
Septicaemia	1	2	3
Icterus Neonatorum	1	—	1
Marasmus	2	10	12
Splenic Anaemia	1	—	1
Accidental Suffocation	2	1	3
Haemorrhage	18	1	19
Dystocia	4	3	7
Foetal Peritonitis	1	—	1
Congenital Renal Disease	1	1	2
Inanition	4	3	7
Congenital Heart Disease	11	2	13
Exomphalos	2	—	2
Volvulus	1	—	1
Birth Injuries	—	1	1
Pemphigus	—	3	3
Erysipelas	—	1	1
Specific Disease	—	2	2
TOTAL	463	195	658

It is evident that premature birth is responsible for almost half the total number of deaths of infants during the neo-natal period. In the majority of cases, it has not been possible to assign definite cause for prematurity. There appears to be no seasonal influence on the occurrence of deaths in any of the above mentioned groups. It will be noted, however, how few cases, viz., 3.3 per cent. of the total deaths, occur at this early age from gastro-enteritis.

THE HEALTH VISITORS' DEPARTMENT.

The work is carried out by a staff of trained health visitors.

The work of the health visitors comprises the following :—

- (1) Ante-natal or pre-maternity clinics for expectant mothers.
- (2) Post-natal clinics for children up to five years of age.
- (3) Instruction classes at the above clinics in cutting out, sewing, knitting, etc.
- (4) Visiting in the homes under the Notification of Births Act.
- (5) Home-visiting in connection with the ante-natal and post-natal clinics.
- (6) Home-visiting of children up to five years of age to advise generally on their care and feeding.
- (7) Home-visiting of pre-school children in relation to defects, e.g., to arrange, in conjunction with the School Medical Department, for treatment of squint, otorrhœa, orthopædic defects, etc.
- (8) School medical inspection (see page 116).
- (9) School clinics—minor ailments and special ailments.
- (10) Home-visiting in connection with school medical work.
- (11) Cleansing of school children.
- (12) Special visits :—
 - (a) Phthisis in women and children.
 - (b) Measles, whooping cough and pneumonia.
 - (c) Infantile diarrhœa.
 - (d) "House to house" inspection.
- (13) Other special visits in connection with :—
 - (a) Aged and infirm people.
 - (b) Prevention of cruelty to children.

- (c) Provision of fireguards.
- (d) Relieving officers.
- (e) Admissions to Day and Resident Nurseries.
- (f) Certain areas in which infantile diarrhoea is likely to occur.
- (g) Supply of milk to expectant and nursing mothers and children.
- (h) Voluntary agencies.
- (i) Other special enquiries.

1. ANTE-NATAL OR PRE-MATERNITY CLINICS.

Experience has shown that conditions productive of a high rate of mortality among mothers point also to a high rate of morbidity, which is, unfortunately, not calculable by available statistics. Among the arrangements for the care and supervision of expectant motherhood ante-natal clinics have a large place.

In Liverpool there are 21 centres at which 36 ante-natal clinics are held weekly, whose care is the welfare of the expectant mother and her coming infant. Of these clinics, 16 are under the auspices of the Liverpool Maternity Hospital, two are held at the Royal Infirmary, one is held at Walton Hospital, one at Mill Road Infirmary, one at Smithdown Road Hospital, two are administered by the Child Welfare Association, and the remaining thirteen by the Health Committee. At an ante-natal clinic, specialised examination is provided, for the most part, by consultant obstetricians.

Classes for mothers are held at the pre-maternity clinics in rotation. At these classes the mothers are advised on preparation for their confinements, hygienic maternity clothes for themselves, and suitable cot, bedding and clothing for the coming infant. The attendances at the classes have shown how much they are appreciated.

The attendances at classes held by the health visitors at ante-natal clinics amounted to 6,516.

Treatment, except of a minor or preventive character, is not given. Patients in need of treatment are referred to private doctors or, if necessary, to a suitable hospital. Milk is provided for expectant mothers on a doctor's order.

The Central Midwives Board have laid down in their rules that midwives must keep notes of the ante-natal condition of their cases in the form approved by the Board. The expert medical opinion and advice, obtainable free, at ante-natal clinics, are most helpful to midwives in this supervision of their patients.

Expectant mothers come to the clinics from many sources, as will be seen by the accompanying table which refers to the Municipal Clinics, Liverpool Transferred Hospital Clinics, Royal Infirmary Clinic, and the Liverpool Maternity Hospital District Clinics.

Voluntary attendances	...	...	...	...	...	3,597
Sent by midwives	...	...	...	...	...	3,424
Recommended by friends	...	...	...	...	...	1,487
Return cases	...	...	...	...	...	925
From other Clinics	...	...	...	...	...	446
Sent by Doctors	...	...	...	...	...	370
„ Health Visitors	...	...	...	...	...	139
„ Hospital	...	...	...	...	...	52
„ Relieving Officers	...	...	...	...	...	44

The new cases (2,721) attending the clinics held in the Liverpool Maternity Hospital are not included in this group.

All ante-natal clinics (including all Hospital clinics).

Total new cases	...	...	...	...	13,205
Total attendances	...	...	...	...	54,534

It is interesting to note that about 60 per cent. of the mothers visited by the health visitors, under the Notification of Births Act, attend the ante-natal clinics.

The great majority of the cases are patients of midwives and those who come of their own accord, an increasing number are private doctors' cases who cannot afford to pay frequent routine visits to the doctor during pregnancy. Those sent by friends and "return cases" also figure largely in the number attending.

The co-ordination between the clinics, the doctors and the midwives is very gratifying.

Mothers who stay at home for their confinements and have no women relations or friends to assist them in their housekeeping are very grateful for the provision of a home help. Home helps are women who can take the place of the housewife in the home, and cook, clean and attend to the children. They are provided by the Women's Service Bureau, Gambier Terrace. This organisation also provides maternity bags and sterilised accouchement sets, which are a great boon to very poor mothers and to those who unexpectedly bear twins. Midwives are encouraged to visit the homes of their patients and to investigate carefully the arrangements for confinement. Where these conditions are unsatisfactory, every effort is made to rectify them at once.

POST-NATAL SUPERVISION OF RECENTLY CONFINED MOTHERS.

Mothers are encouraged to attend the ante-natal clinics after the birth of the infant has taken place. This is for the purpose of examination to ascertain the existence of any morbid condition which might have occurred owing to the confinement. Such lesions, if left untreated, may give rise to much disability and suffering later.

2. INFANT CLINICS OR CLINICS FOR CHILDREN UP TO FIVE YEARS OF AGE.

Infant clinics have a three-fold aim. First, to instruct mothers in the care and feeding of infants and young children; second, to supervise the progress of the young child and to prevent, as far as possible, unnecessary illness due to ignorance of mothers; and third, to assist in restoring the mother to health and in establishing natural feeding. Talks are given to mothers on hygiene and classes are held in which instruction in knitting, cutting out and making children's clothes is given.

Attendances at Municipal Infant Clinic classes numbered 14,443 during the year. This makes a total attendance (adding the ante-natal clinic attendances) of 22,959.

It will be noted that these clinics do not in any sense take the place of a hospital, dispensary or private doctor's consultation. Accessory foods, such as cod liver oil, emulsion, and so forth, are given on a doctor's order at cost price. In the case of infants whose mothers are unable to breast-feed them, Grade A (T.T.) milk, if necessary modified

to prescription, or dried milk may be ordered by the clinic doctors. (A fuller account of this subject comes under the section dealing with milk depots.)

The sources of admission to the infant clinics are similar to those of the pre-maternity clinics, but mothers having once attended an "infant clinic" frequently attend as a matter of course with each succeeding child, so that the number of mothers coming under this category shews a marked increase each year.

The value of the mother's attendance at a clinic is increased by visits to her home which are paid by the health visitor, who has either registered, weighed or taken notes of the doctor's advice for her baby at the clinic.

Children who have been seen by the doctor at a clinic are visited in order to ascertain if the doctor's instructions are understood and are being properly carried out.

The following figures give the condition and feeding of children on admission to those infant clinics which are under the control of the Health Committee:—

Admissions for year	...	...	...	...	...	7,754
---------------------	-----	-----	-----	-----	-----	-------

Condition of health on admission:—

Good	...	...	...	...	...	5,107
Fair (under average)	...	...	...	...	...	1,768
Delicate	...	...	...	...	...	879—7,754

Method of feeding on admission:—

Breast-fed entirely	...	...	...	...	4,743
Partly breast-fed	...	...	...	...	624
Artificially fed entirely	...	...	...	...	2,387—7,754

Total attendances for the year at all centres	...	106,671
---	-----	---------

This shews an increase of 986 over last year.

There are 12 centres at which 28 sessions are held per week.

3. THE HEALTH VISITORS' WORK CARRIED OUT IN THE HOMES.

Visiting in the homes under the Notification of Births Act has been carried out since 1907 in Liverpool. This establishes contact with the mother and child as soon as the puerperium is over and follows on the attendance of the doctor or midwife or on the patient's discharge from hospital. At this time, advice is given and the mother (or child) referred to her own doctor or to an infant clinic.

Visits in this connection are continued, periodically, whether the child attends a clinic or not. Notes are made on the general progress and children are referred for appropriate treatment for defects, when required.

Home visiting is a necessary adjunct to the ante-natal and post-natal clinics. Frequently the directions and advice given in the clinic are not clearly understood by the mother and require further explanation. This is best given informally in the home. The home conditions are sometimes found to be inimical to the welfare of the child or even of the whole family, and it is only by a careful investigation of the circumstances that suitable corrections can be made.

It is noted elsewhere in this report that infantile diarrhoea is much less prevalent now than in former years. To a large extent this is due to the careful visiting of homes and areas likely to be affected in the early part of the year, so that householders may be warned of the danger of flies and advised as to methods for their destruction.

All notified cases of measles, whooping cough and pneumonia nursed at home are also visited by members of the health visiting staff. Appropriate assistance is given, either in the actual nursing of the child or in arranging for its efficient isolation from other members of the family.

The health visitors' duties in connection with the School Medical Department are very extensive and include attendances at the schools during the routine school medical examinations, concentration visits to schools, attendance at all school clinics and clinics for the treatment of special defects, e.g., defective vision, aural troubles, enlarged tonsils and adenoids, and ringworm.

By arrangement with the School Medical Department, pre-school children—that is those under the age of school attendance—suffering

from defects of eyes or ears may receive treatment and advice at the School Medical Department's special clinics. During 1931, 239 children under five years of age were referred for special treatment to this department.

Defective vision	115
Otorrhœa	26
Orthopædic defects	98

Home visits were paid in each case, and all the children were found to be unable to obtain the necessary treatment from private practitioners on account of poverty, or from hospital out-patient departments on account of the already long waiting lists, necessitating loss of time and consequent risk of irremediable defects. (Further details of the work of the health visitors are given in the report of the School Medical Officer, which is separately printed.)

STATISTICS RELATING TO HOME VISITS.

Visits to expectant mothers in 1931 by health visitors ... 1,328

VISITS UNDER THE NOTIFICATION OF BIRTHS ACTS, 1907 TO 1915.

Number of births visited during the year	19,743
Re-visits to births during the year	52,733
Re-visits to infants of 1 year to 5 years of age	58,178

VISITS PAID TO HOMES OF NURSE CHILDREN UNDER PART I
OF THE CHILDREN ACT 2,045

VISITS TO CASES OF INFECTIOUS DISEASE, &c.

Visits to cases of measles	10,748
„ „ whooping cough	1,503
„ „ pneumonia	1,499
„ „ infantile diarrhœa	940
Re-visits to phthisis cases amongst women and children...	6,357
Number of visits paid to schools	8,168
„ hours spent in schools	15,487
„ children inspected in schools	45,393
„ re-inspections in schools	138,642
„ dental inspections in schools	55,664
„ home visits to cases of physical defects	7,656
„ home visits to neglected and verminous school children	21,149
„ home visits to school children suffering from infectious skin diseases, etc	882

Attendance at Minor Ailments Clinics, and Eye, Ear, Tonsils and Adenoids, Dental and Ringworm Clinics :—

Number of visits to school clinics	...	...	...	...	9,358
„ hours spent at school clinics	...	...	...	...	35,117
„ attendances at school clinics	...	...	...	...	285,909

CARNEGIE WELFARE CENTRE.

The Carnegie Welfare Centre has now completed eight years as a most useful and educational welfare centre in the city.

During 1931, the work of former years has been carried on, but with an increased number of attendances in many departments.

Infant clinics are held on four afternoons per week. Two ante-natal clinics are held per week. The attendances at the clinics have shewn an increase each year on those of the year preceding. The classes for knitting, sewing, etc., have also been well attended.

CARNEGIE CENTRE OBSERVATION WARDS.

The number of infants admitted since the opening of the wards is as follows :—

1924	...	...	...	...	...	...	69
1925	...	...	...	...	...	...	116
1926	...	...	...	...	...	...	98
1927	...	...	...	...	...	...	109
1928	...	...	...	...	...	...	106
1929	...	...	...	...	...	...	119
1930	...	...	...	...	...	...	118
1931	...	...	...	...	...	...	107

The reasons for admissions during 1931 were :—

1. Failure to make normal progress 28
 - 24 much improved.
 - 1 taken home with whooping cough.
 - 3 transferred to hospital

2. Infantile Dyspepsia	...	...	...	...	...	...	...	...	...	32
27 cured.										
2 transferred to hospital.										
3 taken home for private medical attention.										
3. Rickets	...	...	...	...	...	...	...	...	...	29
19 much improved.										
2 taken home for private medical attention.										
1 transferred to hospital.										
7 still under treatment.										
4. Observation...	...	...	...	...	...	...	...	...	...	18
e.g. Weaning, breast feeding under observation, no diagnosis, etc.										
10 sent home well.										
3 taken home at parents request.										
3 did not improve.										
2 still under treatment.										

Entirely satisfactory results were achieved in 82.3 per cent. of the cases admitted.

The average duration of stay in the wards has been 41.25 days, but the actual time has varied from a few days to several months.

ULTRA-VIOLET IRRADIATION CLINIC.

CARNEGIE WELFARE CENTRE.

Three sessions are held each week. During the summer months which were rather more than usually fine, the numbers attending were reduced, but on the onset of the colder weather, numbers rapidly increased.

Only those rachitic children definitely non-surgical are treated. Those admitted to the wards give better results on the whole than those attending as out-patients (no inference of any value can be drawn from this fact, as cases are taken as they are sent from the clinics, and no control observations can conveniently be made).

The children who are classed under the heading of "Lack of normal progress" are those in whom no very definite cause for their failure to gain weight normally is apparent. Occasionally the condition is dated from some previous illness or even from weaning. It is frequently due to poverty, mismanagement, neglect, or overcrowding

with resultant conditions of defective hygiene. Occasionally some latent infection is responsible, and more often than not a combination of adverse conditions is found. These cases, as one would expect, give better results when admitted than when attending as out-patients. As out-patients, they are frequently faced with the alternative of turning out, probably insufficiently protected, in inclement weather, or of attending irregularly for treatment. This, naturally, impedes their chances of benefiting as they otherwise might.

CARNEGIE ULTRA-VIOLET IRRADIATION CLINIC.

New cases during 1931	...	...	...	...	...	130
Attendances	...	...	...	...	...	3,548

CHILDREN.

RICKETS	...	...	...	...	...	...	78
In-patients	...	...	...	...	...	...	31
22 good results.							
1 taken home.							
3 transferred to isolation hospital.							
1 discontinued treatment.							
4 still under treatment.							
Out-patients	...	...	...	...	...	...	47
14 good results on completion of treatment.							
4 fairly good	„			„			
13 attended irregularly.							
16 still under treatment at end of year.							
FAILURE TO MAKE NORMAL PROGRESS	...	...	...	...	...	...	29
In-patients	...	...	...	...	...	...	19
14 good results.							
2 poor	„						
3 still under treatment at end of year.							
Out-patients	...	...	...	...	...	...	10
5 good results on completion of treatment.							
5 still under treatment at end of year.							
DEBILITY	...	...	...	...	...	...	9
In-patients	...	...	...	...	...	...	nil.

Out-patients 9

6 good results on completion of treatment

3 attended irregularly.

OTHER CASES 4

In-patients 2

2 good results.

Out-patients 2

2 attended irregularly.

MOTHERS 10

Ante-natal 7

Post-natal 3

8 good results.

2 still under treatment at end of year.

Three Dental Clinics are held weekly for expectant mothers, nursing mothers and children up to five years of age. Two of these clinics are Municipal and one is a Voluntary Clinic.

Municipal clinics :—

New cases 1,032

Ante-natal mothers 386

Post-natal mothers 517

Children 129

Number of extractions 1,990

„ fillings 44

„ scalings nil

„ denture cases 36

Total attendances 1,915

Voluntary clinic (Child Welfare Association):—

New cases 229

Total attendances 693

All clinics :—

New cases 1,261

Total attendances 2,608

INOCULATION CLINIC.

At the end of October, 1930, a clinic was opened at the Carnegie Welfare Centre for the inoculation of children against diphtheria and scarlet fever. The clinic is held once weekly.

Testing of older children for susceptibility to these diseases is also carried out at this clinic.

Number of "SCHICK" tests	...	...	...	...	80
Negative	...	...	...	...	32
Number of "DICK" tests	...	...	...	...	69
Negative	...	...	...	...	32
Immunised against diphtheria and scarlet fever	...	...	...	...	366
Immunised against diphtheria alone	...	...	...	...	15

Inoculation has also been arranged for those children in the several day nurseries whose parents desire it. Of these, 125 children were immunised.

MATERNITY AND REST HOME.

"Quarry Bank," 162, Hawthorne Road.

The accommodation of the home consists of two wards, together with an emergency ward and an isolation ward, containing 18 beds in all. It is intended to provide accommodation for women whose physical condition or home circumstances make it very desirable that they should have rest and care before, during, or after their confinements. It has proved to be of immense benefit in this way, and has been very much appreciated by those who have been received into the home.

The statistics relating to the treatment of patients in the home during the year 1931 are as follows:—

Total number of cases admitted	...	...	...	...	214
Number of women confined in the home	...	...	...	...	189
„ pre-maternity cases	...	...	...	...	25
„ post-natal cases (with infant)	...	...	...	...	nil

The average duration of stay was 18·2 days.

Of the 189 cases of labour conducted in the home, the patients in all cases made a good recovery, and no maternal mortality occurred. The normal cases numbered 169, and the cases of complicated labour were 20. One patient was transferred to hospital for caesarean section. Of the total number of cases 136 were primigravidæ. Former patients admitted for a second confinement at the home numbered 30, and for a third time 2.

Of the 192 babies born in the home, 186 were born alive and six were still-born. In the case of the still-births the causes of death were stated to be: 1, prematurity, 1 cord round neck, 2 inter-cranial hæmorrhage, 1 anencephaly, 1 cause unknown.

Of the 186 babies born alive 4 died within 10 days of birth. The causes of death were stated to be: 1 cerebral hæmorrhage, 2 twin-prematurity, 1 prematurity.

The 25 pre-maternity cases were admitted on account of various complications associated with pregnancy, such as albuminuria, bacilluria, heart disease, varicose veins, hydramnios and contracted pelvis. Of these 21 remained in the Home for confinement.

No case of puerperal sepsis and no case of ophthalmia neonatorum occurred in the home during the year.

A pre-maternity clinic is held at the home once per week, when the medical officer attends to see patients.

During the year 214 patients attended for the first time, and the total number of attendances was 1,198, the average attendance per week was 23.9.

SOURCE OF PATIENTS.

Sent by friends ...	...	...	...	...	149
„ midwives ...	...	...	...	...	1
„ doctors ...	...	...	...	...	26
Referred from hospital ...	...	...	...	...	6
Return cases ...	...	...	...	...	32

DAY NURSERIES.

The Day Nurseries in Liverpool are seven in number, six of which are under the control of the Health Committee. Children from the age of one month to five years are admitted, and may remain from 7 a.m. to 7 p.m. on week-days and 7 a.m. to 1 p.m. on Saturdays.

A daily or weekly charge is made for each child, which is based on an income and expenditure figure. Only the children of mothers who are obliged to work by reason of widowhood, unemployment or incapacity of their husbands are admitted. The particulars given to the matron on admission of each child are investigated by a call made at the home by the health visitor for the district in which it is situated.

The Nurseries provide a training school for nursery nurses and an excellent preliminary training for girls wishing, subsequently, to become hospital nurses.

At one of the nurseries, children may be boarded for short periods to tide over special difficulties in the homes, usually confinement or illness of the mother, as indicated in a subsequent table.

In January, 1929, a kindergarten mistress was appointed to organise and supervise kindergarten work in the nurseries. Each nursery is visited in turn for one week, the nursery staff conducting the classes daily in the interval. Great interest has been shewn by the children in this work, which includes threading coloured beads, building with blocks, modelling with plasticine, colour naming and sorting, drawing with coloured crayons and the making of mats and rings with coloured raffia. The aims of kindergarten work are to aid the children in their natural desire to be busy, to convert their impulses into constructive and useful channels and to encourage sympathy and a love of nature. The growing of bulbs, caring for flowers, birds and domestic pets, marching, singing, musical interpretation and rhymes are included in the daily routine.

This side of the nursery work is a great success, and adds greatly to the pleasure of the children.

The one voluntary nursery is administered on similar lines to those under the control of the Health Committee.

STATISTICS RELATING TO CORPORATION NURSERIES.

NEW ADMISSIONS

Age.	West-minster Road.	* Edge Lane.	Shaw Street.	Smith-down Lane.	Gt. George Square.	Garston.
Under 1 year ...	22	12	24	21	25	19
1 year-2 years ...	12	17	10	16	15	10
Over 2 years ...	20	32	4	16	9	14
TOTAL ...	54	61	38	53	49	43
Total attendances ...	12,478	†4,576	9,132	8,819	6,831	7,284

CONDITION ON ADMISSION.

Good ...	28	49	14	10	16	26
Fairly good ...	14	2	18	23	17	6
Poor ...	12	10	6	20	16	11

NO. OF CASES OF ILLNESS CONTRACTED DURING THE YEAR.

Infectious ...	11	10	9	28	28	22
Other illness ...	4	2	5	3	3	5
TOTAL ...	15	12	14	31	31	27

* Day and Resident Nursery. † These figures refer to Day Nursery only.

ADMISSIONS TO RESIDENT NURSERY, EDGE LANE.

Number admitted during 1931 ...	123
Average duration of residence ...	29·5 days

Reasons for admission :—

Mothers' confinement ...	74
Mothers in hospital ...	28
Mothers in sanatorium ...	3
Mothers in mental hospital ...	3
Mother ill at home ...	3
Mothers in convalescent homes ...	12

STATISTICS RELATING TO CONFINEMENT IN NURSERIES

As the number of admissions to the nurseries has increased, the number of confinements in the hospitals has also increased. The following table shows the number of admissions to the nurseries and the number of confinements in the hospitals for the years 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, and 1900.

Year	Admissions to Nurseries	Confinements in Hospitals
1890	1,234	567
1891	1,345	678
1892	1,456	789
1893	1,567	890
1894	1,678	901
1895	1,789	1,012
1896	1,890	1,123
1897	1,901	1,234
1898	2,012	1,345
1899	2,123	1,456
1900	2,234	1,567

The following table shows the number of admissions to the nurseries and the number of confinements in the hospitals for the years 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, and 1900, classified by the duration of the confinement.

Year	Admissions to Nurseries	Confinements in Hospitals
1890	1,234	567
1891	1,345	678
1892	1,456	789
1893	1,567	890
1894	1,678	901
1895	1,789	1,012
1896	1,890	1,123
1897	1,901	1,234
1898	2,012	1,345
1899	2,123	1,456
1900	2,234	1,567

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1898	2,012	1,345
1899	2,123	1,456
1900	2,234	1,567

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1900	2,234	1,567

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1898	2,012	1,345
1899	2,123	1,456
1900	2,234	1,567

TUBERCULOSIS

TUBERCULOSIS

THE NOTIFICATION BROCHURE

The number of cases on the Notification Register at the end of the year was 1,123. This figure is greater than the number of patients notified from tuberculosis who are under the supervision of the Tuberculosis Officers and whose names are therefore on the Dispensary Register, because a few notified persons do not always notify their medical treatment. Moreover, a number of patients notify their medical treatment to private doctors but do not notify the Dispensary. The notification register is a record of cases.

The number of cases on the notification register and the number of patients on the dispensary register are given below in Table 1.

TUBERCULOSIS.

NOTIFICATION.

Public Health (Tuberculosis) Regulations, 1930.

Summary of Notifications during the period from 28th December, 1930, to 2nd January, 1932 :—

Age-periods.	Notifications on Schedule A.											Total Primary Notifica- tions.	Total Notifica- tions on Form A. (includ- ing dupli- cates
	Number of Primary Notifications of New Cases of Tuberculosis.												
	0-	1-	5-	10-	15-	20-	25-	35-	45-	55-	65-		
Pulmonary—													
Males	3	45	115	74	109	130	222	250	243	121	31	1,343	1,668
Females	2	38	88	88	131	153	226	135	88	45	21	1,015	1,236
Non-Pulmonary—													
Males	7	83	91	61	42	14	29	20	10	5	7	369	451
Females	7	66	69	46	48	41	38	16	12	5	2	350	435

All patients notified by medical practitioners are given an opportunity of attending for examination at one of the Tuberculosis Institutes unless it is stated on the notification form that no action of this description is desired. It is exceptional to find that medical practitioners do not wish their patients to be examined by a Tuberculosis Officer or that the patients themselves refuse to seek his advice.

THE NOTIFICATION REGISTER.

The number of cases on the Notification Register at the end of the year was 9,153. This figure is greater than the number of patients suffering from tuberculosis who are under the supervision of the Tuberculosis Officers and whose names are therefore on the Dispensary Register, because a few notified persons do not wish to accept public medical treatment. Moreover, a number of patients under public medical treatment terminate treatment before they can be written off the notification register as cured cases.

The number of cases on the notification register and the number of patients on the dispensary register are given below in Table I.

TABLE I

	Pulmonary Tuberculosis.		Non-Pulmonary Tuberculosis.		Totals.
	Males.	Females.	Males.	Females.	
Number of cases on the Notification Register ...	3,714	2,869	1,288	1,282	9,153
Number of patients on the Dispensary Register ...	2,669	2,018	881	866	6,434
Difference	1,045	851	407	416	2,719

In Table II is given an analysis of the 2,719 persons whose names are on the notification register but are not on the dispensary register, according to the latest information concerning them.

TABLE II

			Pulmonary Tuberculosis.						Non-Pulmonary Tuberculosis.						Totals.
			Males.			Females.			Males.			Females.			
			State of the Disease.						State of the Disease.						
Whereabouts			Arrested.	Quiescent.	Active.	Arrested.	Quiescent.	Active.	Arrested.	Quiescent.	Active.	Arrested.	Quiescent.	Active.	
Known	...	...	88	175	592	102	179	422	64	65	234	63	80	208	2,272
Not known	...	...	31	56	103	27	65	56	8	18	18	17	23	25	447
Totals	...	...	119	231	695	129	244	478	72	83	252	80	103	233	2,719

TUBERCULOSIS INSTITUTES AND DISPENSARY SYSTEM.

The Tuberculosis Institutes are three in number, and are situated within the Northern, Central and Southern areas of the city. In these branches there are engaged four Tuberculosis Officers and nine whole-time nurses.

A statistical summary of the work of the Institutes in relation to diagrams is given in Table III. It is noteworthy that a definite diagnosis was made in each of 3,392 new patients (exclusive of contacts),

of whom 1,677 were considered to be suffering from a disability which was not tuberculous in nature, and treatment at the public expense was not granted.

TABLE III

Number of Patients	Under observa- tion pending diagnosis on Jan. 1st.	Applying for the first time during the year.	TOTAL.	Found to be			Under observa- tion pending diagnosis on Dec. 31st	Ceased attendance before completion of diagnosis
				Suffering from Tuberculosis.		Not suffering from Tuber- culosis.		
				Pul- monary	Non-pul- monary			
New cases examined during the year (exclud- ing "Contacts")—								
Adults—Male	10	1,257	1,267	614	70	475	48	50
Female	24	1,064	1,088	438	109	440	34	43
*Children—Male	17	743	760	116	157	412	38	20
Female	10	611	621	102	109	350	34	16
"Contacts" examined during the year—								
Adults—Male	—	43	43	2	—	41	—	—
Female	—	102	102	7	—	95	—	—
*Children—Male	—	303	303	3	—	300	—	—
Female	—	318	318	4	2	312	—	—
TOTALS	61	4,441	4,502	1,286	447	2,425	154	129
Insured Persons (included above)—								
Males	10	1,022	1,032	477	41	416	43	45
Females	9	434	443	175	49	185	12	13

* Under 15 years of age.

* Deaths occurring on and after January 1st, 1922, only.

TABLE V.—NON-PULMONARY.
THE CONDITION OF PATIENTS WHOSE CASE RECORDS ARE IN THE POSSESSION OF THE TUBERCULOSIS INSTITUTES.

Condition at the time of the last record made during the year 1921.		THE CONDITION OF PATIENTS WHOSE RECORDS WERE MADE DURING THE YEAR 1921.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
		Cases arising prior to 1922.				Cases arising in 1922.				Cases arising in 1923.				Cases arising in 1924.				Cases arising in 1925.				Cases arising in 1926.				Cases arising in 1927.				Cases arising in 1928.				Cases arising in 1929.				Cases arising in 1930.				Cases arising in 1931.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
		Bones and Joints	Abdominal	Other Organs	Peripheral Glands	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	Bones and Joints	Abdominal	Other Organs	Peripheral Glands	Bones and Joints	Abdominal	Other Organs	Peripheral Glands																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
ALIVE.	DISCHARGED AS CURED.	M	7	...	2	3	12	4	...	3	7	...	5	2	5	1	10	1	...	2	...	3	2	1	...	3	6	1	...	1	1	3	...	...	...	...	1	...	1	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

*Deaths occurring on and after January 1st, 1922, only.

DIAGNOSIS.

The chief aids to diagnosis in doubtful cases were:—

- (a) examination by X-ray;
- (b) continued observation while following an ordinary occupation;
- (c) the repeated examination of the sputum;
- (d) a period of observation in hospital, if necessary.

Use has been made of examination by X-ray in cases in which there were diagnostic difficulties. During the year 655 cases were so examined, with the result that in 169 cases the evidence was in favour of a tuberculous infection, in 383 cases was against the presence of this disease, and in 103 cases the X-Ray evidence was very inconclusive. The result of the X-ray examination in conjunction with clinical evidence has enabled the Tuberculosis Officers to overcome diagnostic difficulties in the great majority of the cases which, at first sight, appeared to be doubtful.

The X-ray apparatus used for this purpose is situated at the Fazakerley Sanatorium.

THE CONDITION OF PATIENTS KNOWN TO THE TUBERCULOSIS OFFICERS.

A statistical return showing in summary form the condition of all patients whose case records are in the possession of the Tuberculosis Institutes at the end of the year, arranged according to the years in which the patients first came under public medical treatment, and according to their classification, is given in the two tables, Table IV, relating to pulmonary cases and Table V to non-pulmonary cases.

It is noteworthy that of 1,286 new pulmonary cases whose names were entered on the dispensary register during the year, 657 (51 per cent.) were in a very advanced stage of disease. By the end of the year, 261 (20 per cent.) of the new cases arising during that year were deceased. There is but little hope of recovery for patients who come under treatment at so late a stage of their illness.

A statistical summary of the work of the Tuberculosis Institutes so far as all cases on the dispensary registers are concerned, is given in Table VI, and at the foot thereof are included a few statistics of a general nature.

TABLE VI.

PATIENTS UNDER THE SUPERVISION OF THE TUBERCULOSIS OFFICERS

Cases on the dispensary register at the beginning of the year	6,828	Cases written off the dispensary register as cured	308
New cases examined during the year	4,380	New cases presenting no evidence of tuberculosis ...	2,554
Cases transferred from other areas and "lost sight of" cases returned	309	Cases transferred to other areas and cases "lost sight of" ...	1,157
		Deceased during the year ...	910
		Cases on the dispensary register at the end of the year ...	6,588
Total ...	11,517	Total ...	11,517

1. Number of attend- } Insured	6,648	5. Number of patients } Insured	1,004
ances of patients (in- } Non-insured	11,505	under domiciliary treat- } Non-insured	876
cluding contacts) at the } dispensaries		6. Number of domiciliary reports received during the year in respect of patients under treatment at home.	
2. Number of reports given to medical practitioners:—		(a) Insured persons	4,302
(a) Personal consultations	60	(b) Non-insured persons	4,030
(b) Other consultations	4,186	7. Number of	
(c) Reports without consultations ...	2,702	(a) Specimens of sputum, etc., examined	4,263
3. Number of visits paid by Tuberculosis Officers to the homes of patients (including personal consultations.	1,210	(b) X-Ray Examinations made in connection with dispensary work	655
4. Number of visits paid by nurses or health visitors to the homes of patients for dispensary purposes ...	34,465	8. Number of reports rendered to the School Medical Department ...	3,572
		9. Number of reports rendered to the Ministry of Pensions	162

In Table VII is given a statistical analysis of the patients under dispensary treatment at the end of the year.

TABLE VII.

PATIENTS UNDER DISPENSARY TREATMENT AT THE END OF THE YEAR.

		Pulmonary.	Non-pulmonary.	Totals.	
INSURED PERSONS	Males	—	—	—	5
	Females	2	3	5	
NON-INSURED PERSONS	Male Adults	16	2	18	134
	Female Adults	26	8	34	
	Male Children*	14	28	42	
	Female Children*	17	23	40	
TOTALS ...	... ..	75	64	139	

* Under 15 years of age.

In Table VIII is given a statistical summary of the patients who, not needing active treatment, were under dispensary supervision at the end of the year.

TABLE VIII.

PATIENTS NOT NEEDING TREATMENT WHO WERE UNDER DISPENSARY SUPERVISION AT THE END OF THE YEAR.

		Pulmonary.	Non-pulmonary.	Totals.	
INSURED PERSONS	Males	627	95	722	1024
	Females	206	96	302	
NON-INSURED PERSONS	Male Adults	209	72	281	2544
	Female Adults	388	148	536	
	Male Children*	465	479	944	
	Female Children*	394	389	783	
TOTALS ...	... ..	2289	1279	3568	

* Under 15 years of age.

HOME NURSING.

The domiciliary nursing of both pulmonary and non-pulmonary cases is carried out by the Liverpool Queen Victoria District Nursing Association, with whom the Liverpool Port Sanitary and Hospitals Committee has an agreement and to whom is made a grant-in-aid.

During the year, 196 pulmonary and 116 non-pulmonary cases were nursed in their homes, and to these cases 10,662 visits were paid.

DOMICILIARY TREATMENT.

This form of treatment is arranged by the Tuberculosis Officers in such cases as have been examined by them, and in which it is considered to be the most appropriate form of treatment. Co-operation between the medical practitioners and the Tuberculosis Officers is secured in every case by means of a quarterly report from the practitioners. At the end of the year, 1,880 patients remained under domiciliary treatment, of whom 1,004 were persons insured under the National Health Insurance Act, and were in receipt of treatment from their panel doctors, and 876 were not insured, and were under the treatment of doctors of their own choice. The domiciliary reports received relating to insured persons numbered 4,302, and those relating to non-insured persons numbered 4,030. Table IX shows the position at the end of the year.

TABLE IX.

PATIENTS UNDER DOMICILIARY TREATMENT AT THE END OF THE YEAR.

		Pulmonary.	Non-pulmonary.	Totals.
INSURED PERSONS	Males	701	40	741
	Females	247	16	263
NON-INSURED PERSONS	Male Adults ...	158	25	183
	Female Adults ...	444	50	494
	Male Children*	65	37	102
	Female Children*	60	37	97
TOTALS ...	... ..	1675	205	1880

* Under 15 years of age.

The arrangements for home treatment, comprising attendance by medical practitioners and the provision of drugs, were described in the 1925 report. The home treatment scheme continues to work smoothly.

CO-OPERATION AND CO-ORDINATION.

The activities of the Tuberculosis Institutes are now so well known that new or suspected cases of tuberculosis are referred from many sources for examination and treatment.

The most important source of reference is the medical profession. It is the practice of the Tuberculosis Officers to give every notified case an opportunity of attending for examination with a view to public medical treatment, and it is encouraging to note that only occasionally do patients refuse to be examined. Once patients have been examined they are kept under supervision until the disease is arrested or they are deceased or have left Liverpool or cannot be traced. Patients leaving Liverpool are notified to the Medical Officer of Health of the district in which they have gone to reside, and with each notification is sent a report as to their condition, treatment, and fitness or otherwise for employment, together with information in accordance with the statistical requirements of memorandum 37/T.

Co-operation between the Ministry of Pensions and the Tuberculosis Officers continues, and during the year, 162 reports were completed in reference to tuberculous pensioners.

Co-operation between the Tuberculosis Officers and the School Medical Officers is secured inasmuch as all definite and suspected cases discovered by the School Medical Officers are referred by the latter to the Tuberculosis Officer for examination, treatment and report. It is also the practice of the Tuberculosis Officers to report to the School Medical Officers their findings in any patient of school age examined. These cross references are very numerous, and during the year the Tuberculosis Officers rendered 3,572 reports to the School Medical Department.

SANATORIA.

The Fazakerley and Broadgreen Sanatoria are situated within the city boundary, and are equipped and administered by the Port Sanitary and Hospitals Committee. Their accommodation and staff at the end of the year were as follows:—

FAZAKERLEY SANATORIUM. Beds, 335.

Staff:—Medical Superintendent, Principal Resident Medical Officer, Radiologist, three Assistant Resident Medical Officers, Consulting Surgeon, Visiting Dental Surgeon, Consulting Throat Specialist; Matron, Sisters and Nursing Staff numbering 60.

NORMAL ALLOCATION OF BEDS.

	Observation.	Pulmonary Tuberculosis.		Non-pulmonary Tuberculosis.		TOTAL.
		"Sanatorium" Cases	"Advanced" Cases	Disease of Bones and Joints.	Other Conditions	
Adult Males ...	2	43	104	30	9	188
Adult Females ...	1	24	64	16	6	111
Children under 15	1	—	—	22	13	36
TOTAL ...	4	67	168	68	28	335

BROADGREEN SANATORIUM. Beds, 336.

Staff:—Medical Superintendent, Senior Resident Medical Officer, three Assistant Resident Medical Officers, Consulting Surgeon, Visiting Dental Surgeon, Radiologist; Matron, Sisters and Nursing Staff numbering 61.

NORMAL ALLOCATION OF BEDS.

	Observation.	Pulmonary Tuberculosis.		Non-pulmonary Tuberculosis.		TOTAL.
		"Sanatorium" Cases	"Advanced" Cases	Disease of Bones and Joints.	Other Conditions	
Adult Males ...	2	104	70	—	—	176
Adult Females ...	2	82	40	—	—	124
Children under 15	—	26	14	—	—	40
TOTAL ...	4	212	124	—	—	340

The total accommodation made use of for patients suffering from tuberculosis was 934 beds, allocated in the following manner:—

TOTAL NUMBER OF BEDS NORMALLY AVAILABLE FOR PATIENTS.

	Observation.	Pulmonary Tuberculosis.		Non-pulmonary Tuberculosis.		TOTAL.
		"Sanatorium" Cases.	"Advanced" Cases	Disease of Bones and Joints.	Other Conditions	
Adult Males ...	4	118	267	27	12	428
Adult Females ...	3	78	143	18	8	250
Children under 15...	1	80	8	98	69	256
TOTAL ...	8	276	418	143	89	934

The extent of residential treatment afforded during the year is shown in Table X.

TABLE X.

	In Institutions on Jan. 1st.	Admitted during the year.	Discharged during the year.	Died in the Institutions.	In Institutions on Dec. 31st.
NUMBER OF PATIENTS:—					
Adults—Male					
Pulm. ...	356	665	493	153	375
Non-pulm. ...	40	79	76	6	37
Female					
Pulm. ...	180	416	314	86	196
Non-pulm. ...	23	87	76	4	30
Children*—Male					
Pulm. ...	48	53	63	5	33
Non-pulm.	97	126	135	17	71
Female					
Pulm. ...	71	51	69	10	43
Non-pulm.	71	100	95	15	61
NUMBER OF OBSERVATION CASES:—					
Adults—Male ...	7	39	45	—	1
Female ...	4	25	29	—	—
Children*—Male ...	—	2	2	—	—
Female ...	—	6	6	—	—
TOTALS	897	1,649	1,403	296	847

* Under 15 years of age.

A return showing the immediate results of treatment of patients discharged from residential institutions during the year is given in Table XI.

Classification on admission to the institution and condition at time of discharge.	DURATION OF RESIDENTIAL TREATMENT												TOTAL
	Under 3 months.			3—6 months.			6—12 months.			More than 12 months.			
	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	M.	F.	Ch.	
PULMONARY TUBERCULOSIS :—													
Class T.B. minus—													
Quiescent	19	24	4	12	11	5	3	2	18	8	10	20	136
Not Quiescent	41	31	27	28	8	18	10	4	7	7	3	24	208
Died in institutions	3	—	4	1	—	1	—	—	—	1	1	1	12
Class T.B. plus, Group 1—													
Quiescent	1	1	—	3	2	—	3	1	—	1	—	—	12
Not Quiescent	4	4	—	6	2	—	5	8	1	7	1	—	38
Died in institutions	—	—	—	—	—	—	—	—	—	—	1	—	1
Class T.B. plus, Group 2—													
Quiescent	6	2	—	9	4	1	9	3	1	7	2	—	44
Not Quiescent	59	43	—	59	39	—	60	28	—	39	19	3	349
Died in institutions	7	3	—	3	5	—	9	3	1	6	4	1	42
Class T.B. plus, Group 3—													
Quiescent	—	—	1	1	1	—	1	—	—	1	—	—	5
Not Quiescent	35	29	2	28	14	—	16	12	—	5	6	—	147
Died in institutions	81	36	3	24	18	3	10	9	—	8	6	1	199
NON-PULMONARY TUBERCULOSIS :													
Bones and Joints—													
Quiescent	2	—	6	1	1	1	5	—	12	1	4	28	61
Not Quiescent	12	11	19	—	2	3	2	1	5	5	—	5	65
Died in institutions	—	1	2	1	1	1	—	—	—	2	—	3	11
Abdominal—													
Quiescent	1	—	5	1	2	10	—	2	6	—	1	4	32
Not Quiescent	8	6	16	—	—	5	1	—	5	1	—	1	43
Died in institutions	1	2	4	—	—	—	—	—	—	—	—	3	10
Other Organs—													
Quiescent	4	3	1	—	—	—	—	1	1	—	—	1	11
Not Quiescent	8	4	7	3	—	—	1	—	—	—	—	1	24
Died in institutions	1	—	18	—	—	—	—	—	—	1	—	—	20
Peripheral Glands—													
Quiescent	4	1	2	1	1	4	1	—	11	—	—	3	28
Not Quiescent	12	36	56	1	—	8	1	—	3	—	—	1	118
Died in institutions	—	—	—	—	—	1	—	—	—	—	—	—	1
	Pulmonary Tuberculosis						Non Pulmonary Tuberculosis						
	Under 4 weeks			Over 4 weeks			Under 4 weeks			Over 4 weeks.			
Observation for purpose of diagnosis. { Tuberculous	1	—	—	—	—	—	—	—	—	—	—	—	1
{ Non-tuberculous	15	9	2	24	13	3	—	2	—	4	4	3	79
{ Doubtful... ..	—	1	—	1	—	—	—	—	—	—	—	—	2
	TOTAL												1,699

AFTER-CARE.

The after-care arrangements in force are as follows :—

- (1) The periodic examination by the Tuberculosis Officers of all cases under public medical treatment.
- (2) Visits paid to patients in their homes by the nurses attached to the Tuberculosis Institutes, and by the health visitors and sanitary inspectors employed by the Health Committee.
- (3) Visits paid to patients in their homes by the nurses of the Queen Victoria District Nursing Association.
- (4) The reference of cases presenting peculiar difficulties to voluntary associations, such as the Child Welfare Association, the Personal Service Society, etc.

During the year the nurses attached to the Tuberculosis Institutes made 13,081 home visits. The health visitors and sanitary inspectors made 10,722 home visits. All these visits are the subject of report to the Tuberculosis Officer concerned. The home visits of the nurses of the Queen Victoria District Nursing Association, to the number of 10,662 have already been referred to.

LEGISLATION AND REGULATIONS.

PUBLIC HEALTH ACT, 1925.

Section 62 of the Public Health Act, 1925, gives power to a Local Authority to obtain a magistrate's order for the removal to an institution of a patient suffering from pulmonary tuberculosis so housed that there is danger of the spread of infection. Although it has not been found necessary to take action under this Act, the possession of the power to do so has proved valuable in persuading to enter a sanatorium patients who would not otherwise have done so.

PUBLIC HEALTH (PREVENTION OF TUBERCULOSIS) REGULATIONS, 1925.

These regulations give power to the Local Authority to prevent patients suffering from tuberculosis in an infectious stage from handling milk under conditions which give rise to the danger of the spread of infection through the medium of the milk. Careful enquiries are made as to the nature of the employment of all tuberculous patients coming under supervision, particularly in reference to pulmonary cases with a

positive sputum. During the year six persons suffering from tuberculosis in an infectious form were found to be living in a dairy. These patients were too ill to be able to follow any form of employment, and they willingly agreed to refrain from attempting to take any part in the milk trade.

SILICOSIS AND ASBESTOSIS (MEDICAL ARRANGEMENTS)

SCHEME, 1931.

With the approval of the City Council, the Secretary of State has authorised the Liverpool Tuberculosis Officers to make initial examinations of workmen engaged in occupations which expose them to the danger of silicosis or asbestosis. During the year 12 workmen newly engaged in work of this description were examined and reports were rendered to the appropriate Medical Board.

NON-PULMONARY TUBERCULOSIS.

Enquiries were made by the Public Health Department into 736 new cases of non-pulmonary tuberculosis arising during 1931, with the following results :—

Districts,	Cases.	Rate per 10,000 of population.
Exchange	82	10·8
Abercromby	57	13·4
Everton	83	7·4
Kirkdale	72	11·1
Edge Hill	66	8·0
Toxteth	116	8·6
Walton	64	7·1
West Derby	75	7·5
Wavertree	56	5·7
Fazakerley	58	11·3
Woolton	7	10·5
Whole city	736	8·6

The following figures summarise the cases of non-pulmonary tuberculosis inquired into during the years 1921-1931 inclusive, divided into two groups, namely, A and B. In group A are included all cases in which there has been no history of exposure to infection from a patient suffering from pulmonary tuberculosis; whereas in group B are placed all those cases in which there was a history of exposure to infection from a human source. Presumably group A consists of cases which may have been infected from either human or bovine sources, but group B consists almost entirely of infections of human origin.

Site of disease.	GROUP A.	GROUP B.	Percentage of total Group A cases.	Percentage of total Group B cases.
	No history of exposure to human infection. Possibly infected from either a human or a bovine source.	History of exposure to human infection. Presumably infected from a human source.		
Bones and Joints ...	1,697	155	25.9%	22.4%
Abdominal ...	1,382	156	21.1%	22.5%
Peripheral Glands ...	2,072	224	31.7%	32.3%
Meninges and Brain ...	679	93	10.4%	13.4%
Skin... ..	199	27	3.0%	3.9%
Urino-genital ...	149	8	2.3%	1.2%
Other sites and ill-defined	365	30	5.6%	4.3%
TOTALS ...	6,543	693		

The figures appear to show that there occurs an excess of patients suffering from abdominal tuberculosis and from meningitis among those exposed to infection from a human source, whereas there is an excess of bone and joint disease among patients more likely to have been infected from a bovine source. This conclusion, in so far as it points to infection with abdominal tuberculosis being frequently of human derivation, is at variance with the one usually accepted.

NOTIFICATION AND DEATHS.

During the year an enquiry was made into the circumstances which led to the non-notification of cases which first came to notice on the death returns of local registrars. These cases were 84 in number, made up of 38 cases of pulmonary tuberculosis and 46 cases of non-pulmonary tuberculosis. The reasons for the absence of notification are classified in Table XII below.

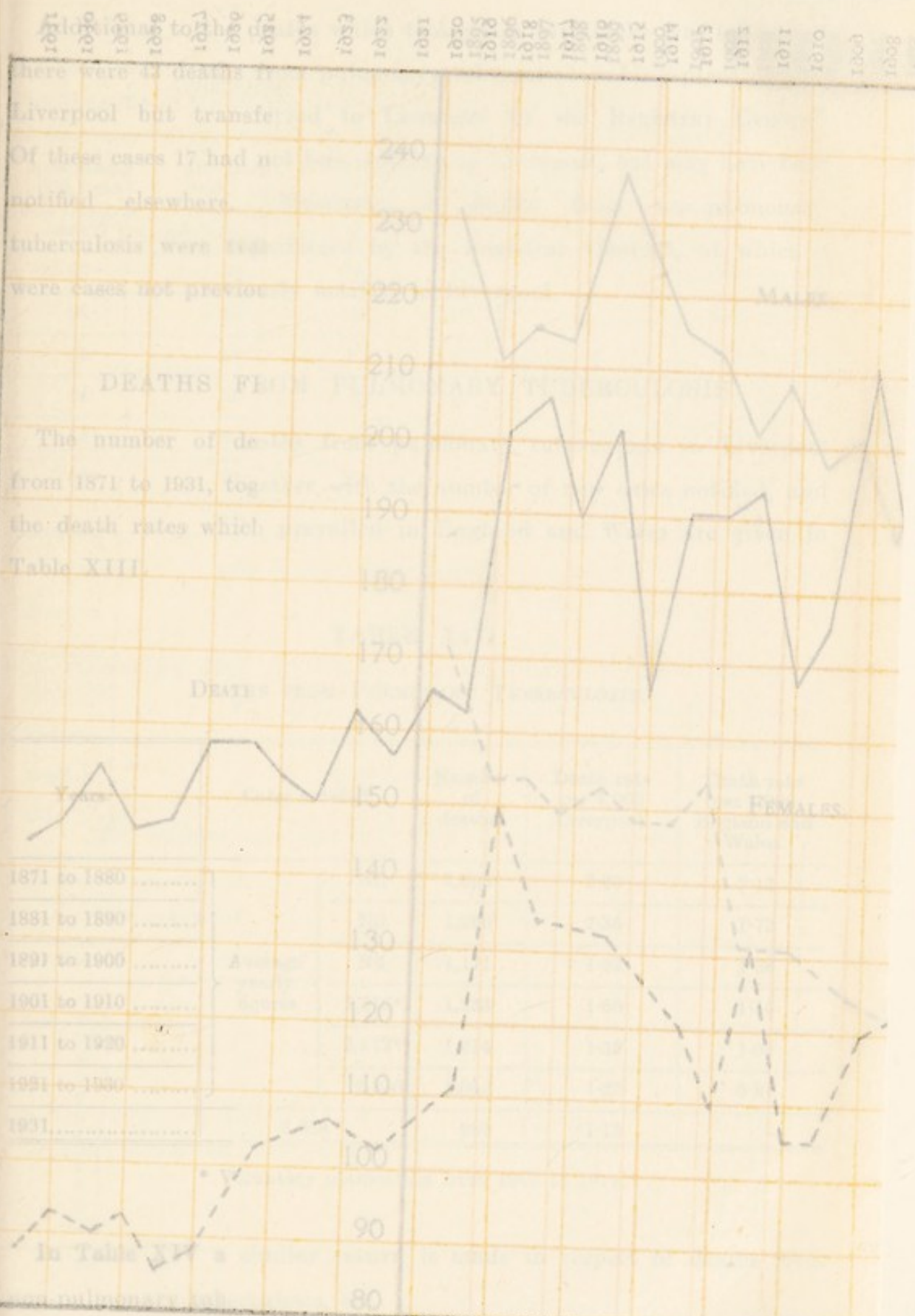
TABLE XII.

Disease.	Number of persons who died within the city.	Number of city deaths not notified before death.	Reasons for Non-notification.				
			Diagnosis made at a post-mortem examination.	Diagnosis made after death but without a post-mortem examination.	Notification not completed because death took place very soon after a diagnosis was made.	The doctor thought that the case had been notified previously by another medical practitioner.	Notification forgotten.
Pulmonary tuberculosis	945	38 4.0%	15 1.5%	11	3	7	3
Non-pulmonary tuberculosis	155	46 29.7%	10 6.1%	22	3	5	6

It is noteworthy that the omission of notification in 1.6 per cent. of the cases of pulmonary tuberculosis was unavoidable because a diagnosis was reached as the result of a post-mortem examination. For the same reason the absence of notification in 6.1 per cent. of the cases of non-pulmonary tuberculosis could not be avoided. The balance of the notification omissions, namely 2.4 per cent. in pulmonary cases and 23 per cent. of non-pulmonary cases are avoidable to some extent. Nevertheless, it should be remembered that in some fatal cases a diagnosis of tuberculosis is based on bacteriological and pathological reports, which may not be available until after the death of the patient. From the point of view of the spread of infection, it is the pulmonary cases which are important. In these cases there does not appear to be a serious failure to notify on the part of Liverpool medical practitioners.

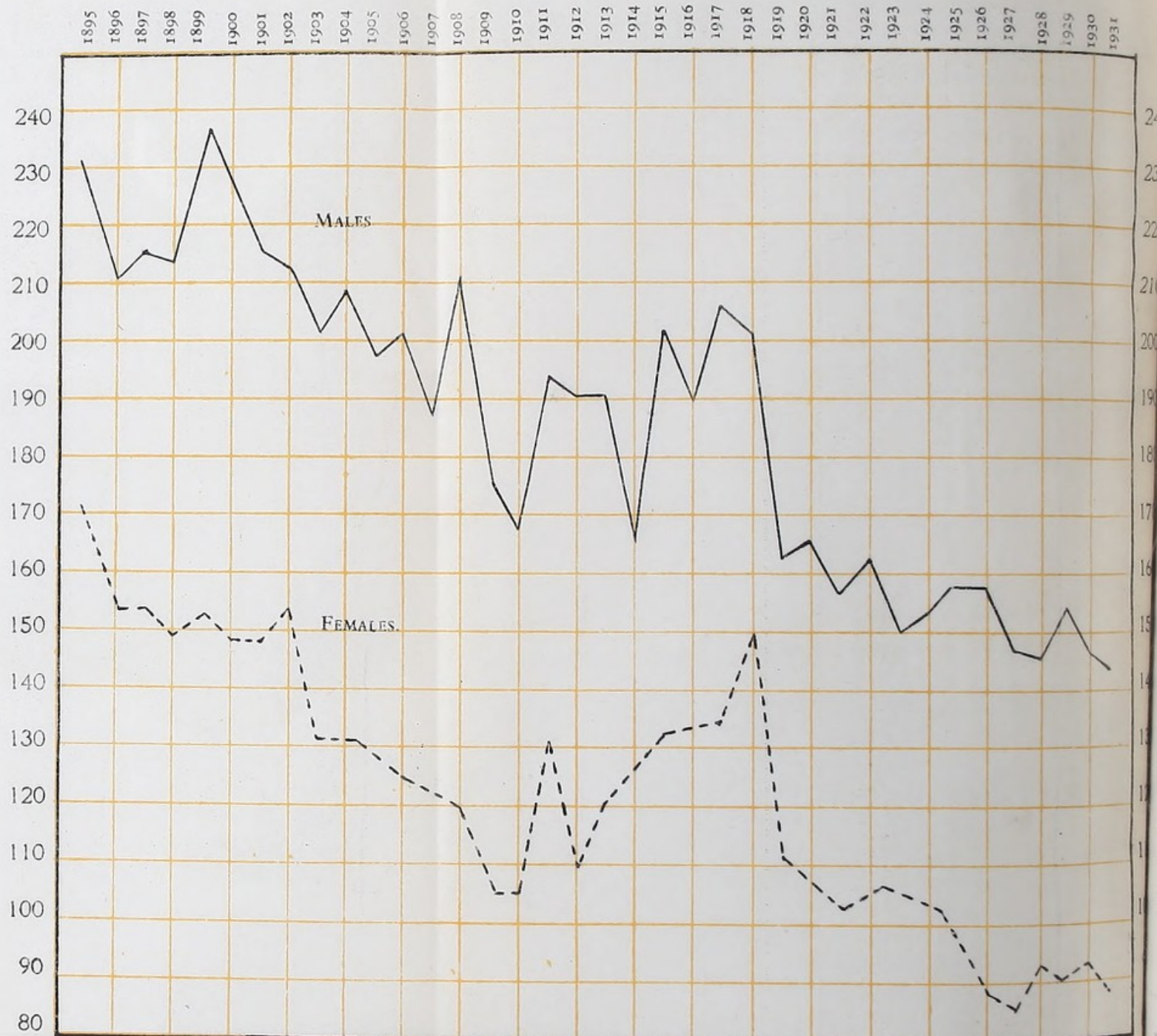
CITY OF LIVERPOOL.

DEATH RATES PER 100,000 OF POPULATION.



CITY OF LIVERPOOL.

PHTHISIS DEATH RATES PER 100,000 OF POPULATION.



Additional to the deaths which took place within the city boundary, there were 43 deaths from pulmonary tuberculosis taking place outside Liverpool but transferred to Liverpool by the Registrar General. Of these cases 17 had not been notified in Liverpool, but may have been notified elsewhere. Similarly, 8 deaths from non-pulmonary tuberculosis were transferred by the Registrar General, of which 4 were cases not previously notified in Liverpool.

DEATHS FROM PULMONARY TUBERCULOSIS.

The number of deaths from pulmonary tuberculosis in Liverpool from 1871 to 1931, together with the number of new cases notified, and the death rates which prevailed in England and Wales are given in Table XIII.

TABLE XIII.

DEATHS FROM PULMONARY TUBERCULOSIS.

Years.	Cases notified.	Number of deaths.	Death rate per 1,000 Liverpool.	Death rate per 1,000 England and Wales.
1871 to 1880	Average yearly figures	Nil	1,506	2.90
1881 to 1890		Nil	1,260	2.35
1891 to 1900		Nil	1,171	1.92
1901 to 1910		2,216*	1,233	1.68
1911 to 1920		2,812*	1,214	1.55
1921 to 1930		2,356	1,042	1.23
1931.....	2,358	989	1.15	—

* Voluntary notification from 1901 to 1911.

In Table XIV a similar return is made in respect of deaths from non-pulmonary tuberculosis, etc.

TABLE XIV.

DEATHS FROM NON-PULMONARY TUBERCULOSIS.

Years.	Cases notified.	Number of deaths.	Death rate per 1,000 Liverpool.	Death rate per 1,000 England and Wales.	
1871 to 1880	Average yearly figures	Nil	481	·90	·75
1881 to 1890		Nil	527	·98	·70
1891 to 1900		Nil	500	·82	·63
1901 to 1910		100*	416	·56	·50
1911 to 1920		716*	349	·45	·35
1921 to 1930		640	234	·27	·20
1931.....	719	164	·19	—	

* Voluntary notification from 1901 to 1911.

The age and sex distribution of deaths from both pulmonary and non-pulmonary tuberculosis are given in Table XV.

TABLE XV.

AGE PERIODS OF DEATHS FROM TUBERCULOSIS DURING 1931.

Age Periods.	PULMONARY.		NON-PULMONARY.	
	Males.	Females.	Males.	Females.
0—1	—	2	9	9
1—5	8	2	28	27
5—10	4	3	10	8
10—15	2	12	3	9
15—20	41	65	6	8
20—25	64	68	10	5
25—35	101	98	5	6
35—45	123	67	3	4
45—55	130	47	3	1
55—65	82	23	3	4
65 and upwards	33	14	1	2
TOTALS ..	588	401	81	83

The distribution of deaths from pulmonary tuberculosis according to the districts in which the patients resided and according to the quarter of the year during which death took place is given in Table XVI.

TABLE XVI.

DEATHS FROM PULMONARY TUBERCULOSIS IN DISTRICTS.

DISTRICTS.	QUARTERS.								YEAR 1931.		
	March.		June.		Sept.		Dec.		Totals		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.&F.
Exchange	25	15	20	11	16	13	16	7	77	46	123
Abercromby	8	5	5	4	4	5	9	6	26	20	46
Everton	34	19	20	21	14	13	24	16	92	69	161
Kirkdale	21	15	14	17	19	8	8	7	62	47	109
Edge Hill	18	9	16	8	12	5	8	9	54	31	85
Toxteth	25	20	24	9	14	9	23	17	86	55	141
Walton	19	13	12	7	8	10	12	11	51	41	92
West Derby	15	11	15	8	17	8	17	13	64	40	104
Wavertree	18	7	13	7	9	11	6	8	46	33	79
Fazakerley	5	5	5	4	6	5	9	5	25	19	44
Woolton	2	—	—	—	1	—	2	—	5	—	5
City	190	119	144	96	120	87	134	99	588	401	989
	309		240		207		233				

N.B.—Deaths in public institutions are transferred to the districts from which the patients came.

A similar return in respect of deaths from non-pulmonary tuberculosis is given in Table XVII.

TABLE XVII.
DEATHS FROM NON-PULMONARY TUBERCULOSIS IN DISTRICTS.

DISTRICTS.	Tubercular Peritonitis.		Tubercular Meningitis.		Other forms of Tuberculosis.		YEAR 1931. Totals		
	M.	F.	M.	F.	M.	F.	M.	F.	M.&F.
Exchange	1	1	2	4	3	3	6	8	14
Abercromby... ..	—	1	—	7	1	4	1	12	13
Everton	3	3	4	6	7	1	14	10	24
Kirkdale	—	2	4	6	1	—	5	8	13
Edge Hill	1	1	5	4	3	1	9	6	15
Toxteth	2	2	8	3	5	4	15	9	24
Walton	3	2	5	4	5	3	13	9	22
West Derby	1	3	3	2	—	2	4	7	11
Wavertree	3	3	5	3	2	2	10	8	18
Fazakerley... ..	1	1	1	5	2	—	4	6	10
Woolton	—	—	—	—	—	—	—	—	—
City	15	19	37	44	29	20	81	83	164
	34		81		49				

N.B.—Deaths in public institutions are transferred to the districts from which the patients came.

#

VENEREAL DISEASES.

The purpose of the establishment by the Corporation of venereal disease schemes is to afford facilities for the diagnosis and treatment of these diseases in accordance with the recommendations of the Royal Commission in 1917.

The recommendations may be summarised as follows :—

1. That opportunities should be afforded to sufferers to have free and expert treatment.
2. That extended facilities should be provided for the diagnosis of these diseases.
3. That information as to the dangers of venereal diseases should be disseminated, and particulars given to the public as to the facilities provided for free treatment.

Clinics have been established as under :—

Seamen's Dispensary—Males only.

*Royal Infirmary—Males and Females.

David Lewis Northern Hospital—Males and Females.

*Royal Southern Hospital—Males and Females.

*Stanley Hospital—Males and Females.

*Edge Lane Hospital—Females.

The following summarises the work of the treatment centres for the year 1931 :—

RETURN SHOWING THE NUMBER OF NEW CASES ATTENDING
THE VENEREAL DISEASES CLINICS DURING THE YEAR 1931.
ALSO TOTAL ATTENDANCES AND IN-PATIENT DAYS OF OLD AND
NEW PATIENTS DURING SAME PERIOD.

	Seamen's Dispensary. Males only.	Royal Infirmary. Males and Females.	Royal Southern Hospital. Males and Females.	David Lewis Northern Hospital. Males and Females.	Stanley Hospital. Males and Females.	Edge Lane Medical Home. Females.	TOTAL. Males and Females.
New cases ...	1,667	1,036	353	248	296	127	3,727
Old and new patients							
Total attendances	54,164	43,791	13,858	8,766	9,425	—	130,004
In-patient days	—	65	3,303	—	130	9,020	12,518

* Beds are reserved for In-patients at these Institutions.

SERVICES RENDERED AT THE VENEREAL DISEASES TREATMENT CENTRES DURING THE YEAR 1931.

	Syphilis.			Soft Chancere.			Gonorrhoea.			Condition other than Venereal.			TOTALS.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
1. Number of cases on 1st January under treatment or observation	1,260	733	62	...	1,555	696	58	24	2,653	1,393	4,298	...	...	...	...
2. Number of cases removed from the register during any previous year which entered treatment or observation of the same infection	114	13	2	...	122	9	...	...	238	22	260	...	...	...	...
3. Number of cases dealt with for the first time during the year under report (exclusive of cases under Item 1) arising from— Syphilis, primary " latent in 1st year of infection " all later stages Soft Chancere Gonorrhoea, 1st year of infection " later Condition other than venereal	197 28 209 18 44 1 ...	21 22 110 44 50 1 ...	...	...	...	...	...	...	...	...	...	197 53 269 18 62 1 ...	...	...	...
4. Number of cases dealt with for the first time during the year under report known to have been imported from other Venereal Centres for the same infection	195	24	18	...	194	29	...	...	407	53	460	...	...	...	...
5. Number of cases discharged after completion of treatment and final tests of cure	2,064	994	181	1	3,395	891	983	169	6,023	1,993	8,018	...	...	...	...
6. Number of cases which ceased to attend after completion of treatment, or were, on first attendance, suffering from— Syphilis, primary " latent in 1st year of infection " all later stages Soft Chancere Gonorrhoea, 1st year of infection " later	135 24 179 15 ...	15 12 96 29 ...	...	...	...	...	...	...	...	...	...	135 15 91 27 ...	...	...	...
7. Number of cases which ceased to attend after completion of treatment but before final tests of cure	49	18	7	...	184	13	...	...	240	31	271	...	...	...	...
8. Number of cases transferred to other Venereal Centres, or to institutions, or to cases of private practitioners	214	18	24	...	251	33	...	...	489	51	540	...	...	...	...
9. Number of cases remaining under treatment or observation on 31st December	1,294	756	27	1	1,471	674	26	14	2,818	1,445	4,263	...	...	...	...
10. Number of cases in the following stages of syphilis included in Item 6 which failed to complete one course of treatment— Syphilis, primary " secondary " latent in 1st year of infection " all later stages Soft Chancere Gonorrhoea	31 17 7 9 2	5 6 4 22 ...	...	...	...	...	...	...	...	...	...	31 13 7 49 2	...	...	...
11. Number of attendances— (a) for individual attention of the medical officers (b) for special treatment, e.g., irrigation, douching	15,629 1,922	6,336 139	634 1,260	7 ...	29,807 63,132	5,852 1,748	1,912 4	207	47,992	12,707	60,699	...	...	...	...
TOTAL ATTENDANCES	16,661	6,675	1,894	7	94,839	7,905	1,916	307	113,410	14,394	130,034	...	...	...	...
12. In-patients— (a) Total number of persons admitted for treatment (b) Aggregate number of "in-patient days" of treatment given	12 223	6 521	3 31	...	21 707	39 1,931	7 15	...	43 976	36 2,522	79 3,498	...	...	...	...
13. Number of cases of congenital syphilis in Item 3 above classified and included in age periods	...	11	4	8	7	14	7	11	18	44	...	...	...	...	...
14. Treatment of Syphilis— (a) Number of injections given (post-patients and in-patients) (b) Number of patients who on first attendance were suffering from primary syphilis	...	...	...	...	11,922	88	...	...	9,489	...	...	...	...	...	...
15. PYRENOGENIC WARTS— (a) Number of specimens examined at and by the medical officers of the treatment centres (b) Number of specimens from patients attending at the centres sent for examination to an approved laboratory	...	...	...	...	2,958	5	...	...	3,725	...	...	...	...	...	...

SEAMEN'S DISPENSARY.

This clinic for males, is open all day, and has proved to be a very useful centre for the treatment of venereal disease.

The staff consists of three part-time medical officers and four highly trained orderlies.

Excellent results have been recorded both in the treatment of gonorrhœa and of syphilis, and special schemes of treatment particularly suited to the needs of the seafaring population have proved efficient.

By careful interrogation of patients and the keeping of records over several years it has been established that the average seaman who becomes infected has not practised any prophylaxis, and that the taking of alcohol to excess is not such a contributory factor in the acquisition of venereal disease as is generally supposed. It would appear, however, that in men over thirty years of age, venereal disease is frequently associated with the taking of alcohol, not necessarily to excess.

During the year under review, 2,953 cases have been advised and treated, of whom 1,971 reported for the first time. Of these, 563 were found not to be suffering from venereal disease.

The classification of the persons dealt with at the clinic for the first time during the year, and also for the four previous years, was as under :—

	1927	1928	1929	1930	1931
Syphilis	459	435	413	419	346
Soft chancre	157	131	150	141	92
Gonorrhœa	931	1,031	1,112	1,113	970
Non-Venereal Cases ...	295	446	446	589	563
	1,842	2,043	2,121	2,262	1,971

The figures given above show a decline in the number of patients suffering from venereal disease during 1931, this is especially so in the

case of gonorrhœa. The reason for this drop is not evident, the decline in shipping and other occupations with the accompanying lack of employment for workers may have had an effect.

Evening clinics are held twice weekly at the dispensary, and during the year there were 87 new cases and approximately 2,000 attendances. These patients have satisfied the medical officer that they cannot attend at the usual clinic hours.

This clinic is taken advantage of by patients of all classes of occupation, but the majority are seafaring men.

Experience has shown that it is the close personal touch with the patient and the interest in his or her case which help to stimulate the sufferer to continue treatment, but the absence of any feeling of ill-health or discomfort may cause the development of a sense of indifference and the desire to avoid the irksome routine of attendance.

Many patients who are suffering from gonorrhœa unfortunately do not report for treatment until a few weeks have elapsed and the disease has extended considerably from the original point of infection, in many cases having complications, and involving important organs. This neglect or inability to seek medical advice may be attributed to the nature of employment or absence on ship at sea, but those who reside locally frequently can and do come for treatment at an earlier stage; the disease, however, is well established in the majority before they present themselves for treatment.

With regard to syphilis, it is found, from figures compiled at the Seamen's Dispensary, that only 25 per cent. of the syphilitic cases attending there appear for treatment in the pre-Wasserman reaction stage, and 24 per cent. appear as early syphilis with primary sore and positive Wasserman test. Those with syphilis in the secondary stage, with rash, sore throat, etc., form only 8 per cent. of the total. The important point, however, is that fully 40 per cent. of patients are in the stage of later or latent syphilis, including treated cases of more than two years' duration.

An analysis of the various types of the total actual number of venereal disease cases met with at the principal clinics is as follows:—

	Percentage of total cases of Diagnosed Venereal Disease.
Syphilis	40·8%
Soft chancre	2·4%
Gonorrhœa	56·8%

The figures for Liverpool correspond to those for the country generally.

HOSTEL FOR WOMEN.

EDGE LANE HOSPITAL is a home of 25 beds for girls suffering from venereal disease. The total admissions were 127 during 1931.

The patients are all unmarried girls, and are mostly first offenders. Those who are pregnant are treated till their labour is due, when they are transferred to Walton Hospital for confinement, and are re-admitted with their babies after the puerperium. The girls are frequently sent to the Home from the venereal diseases clinics in the town, from doctors, the patrols, the Salvation Army Homes, Homes for Unmarried Mothers, Rescue Homes, Prison and the Institutions. They are all young, their ages varying from 14—23, and they are all Liverpool girls. As the beds are always full, preference is given to girls who have become infected through ignorance or in other ways; the prostitute is only admitted under exceptional circumstances.

The patients who are well enough help in the work of the house—the laundry work and sewing. Games, dancing, reading and plays are recreations organised by the home matron. Those who have babies feed, tend and sew for them themselves—the result being the children are very healthy. Adoption of the children is not encouraged. On leaving the Home the mothers are found places where they can take their babies, or if this is impossible the children are put in nurseries and the mother pays for their keep. The medical officer attends the hospital weekly and sees and treats all the in-patients and a few out-patients, i.e., discharged former patients. The intermediate treatment is done by the sister-in-charge and nurse.

When fit for discharge each girl is, if possible, found a suitable occupation. This is an extremely difficult matter, and is managed by the sister-in-charge.

EDUCATIONAL PROPAGANDA.

At the inauguration of the venereal diseases scheme the Ministry of Health approved of certain educational work being conducted to acquaint the general public and those likely to come into contact with venereal disease of the dangers arising therefrom. After several years' effort in Liverpool, the work has culminated in the merging of the various Merseyside boroughs into a scheme for this and general health purposes under the Merseyside Boroughs Health Education Committee.

Lectures and addresses have been delivered in the districts mentioned by Dr. Hall, the lecturer-organiser of the Committee.

HOSPITAL AND HEALTH SERVICES.

INFECTIOUS HOSPITALS and SANATORIA.

During the year 1931 the City Infectious Hospitals and Sanatoria were in full commission.

At the end of the year the amount of hospital accommodation for infectious cases was as follows:—

City Hospital North	...	...	...	...	168 beds.
" South	...	...	...	...	101 "
" East	...	...	...	...	156 "
" Fazakerley	...	...	...	...	299 "
" Fazakerley Annexe...	...	...	...	...	150 "
" Sparrow Hall	...	...	...	...	160 "
Fazakerley Sanatorium	...	...	...	...	264 "
Broadgreen Sanatorium	...	...	...	...	336 "
					1,634 "

At the City Hospital, Fazakerley, 71 beds are set aside for the treatment of tuberculous patients, in addition to the beds at the Fazakerley Sanatorium.

At the beginning of the year the City Infectious Hospitals were well occupied owing to an extensive outbreak of diphtheria, coincident with a considerable increase in the number of cases of measles recommended for hospital treatment. By the end of February there were 602 cases of diphtheria under treatment in the City Hospitals, but the cases then commenced to decline, and by September had fallen to 259. The number of cases of measles which had remained high during the first four months of the year, averaging 200 patients, also declined, and by September only five cases of measles were under treatment. In July, however, cases of whooping cough were being reported for hospital treatment, and a steady increase took place in the following months of cases of this disease, and by the end of the year there were 206 cases in hospital. To assist in dealing with the large number of cases reported for removal to hospital, arrangements were made for utilising beds available at some of the institutions transferred from the Guardians, viz.:—Belmont Road Institution, Walton Hospital, Smithdown Road Hospital and the Olive Mount Children's Hospital.

During the course of 1931 the cases of infectious disease in Belmont Road Institution and Smithdown Road Hospital were concentrated at the Olive Mount Children's Hospital, where there are four two-storey hospital blocks each containing 22 beds suitable for acute cases, and where cottages are available for a large number of convalescent cases.

The accommodation provided in the transferred institutions proved of the greatest service in dealing with the large number of cases requiring hospital treatment, and enabled practically every case reported to be removed to hospital without delay.

Beds were provided at the various hospitals during the year for patients suffering from the following diseases, viz.:—Scarlet fever, diphtheria, measles, whooping cough, enteric fever, erysipelas, cerebro-spinal fever, encephalitis lethargica, anthrax, influenzal pneumonia and chickenpox.

The value of the hospitals, and the immense amount of useful work performed, is shown by the fact that no less than 7,888 patients were treated within their walls during the year.

The Hospitals Committee have agreed with various Local Authorities to receive cases of infectious disease from districts beyond the city boundary, namely, Sefton Rural District, Waterloo and Seaforth, Great Crosby, Little Crosby, Leasowe Hospital, and the Children's Convalescent Home, West Kirby.

Arrangements have also been made to deal with any case of cholera, yellow fever, or plague, which may arise in any of the neighbouring Urban or Rural Districts. A suitable charge is made in each case.

OUTSIDE AREAS AND SMALLPOX.

The question of smallpox cases in neighbouring areas was specially considered by the Port Sanitary and Hospitals Committee in 1928. Arrangements had been in force for some years with several of the local authorities in the district for any cases of smallpox occurring in their areas to be accommodated in Liverpool hospitals.

It has always been recognised that the presence of smallpox in areas adjoining or close to Liverpool is a matter in which the city is vitally interested, as an outbreak of this disease, unless promptly dealt with, might result in the spread of the infection to the Liverpool area, and also do considerable harm to the trading interests of the city and port.

A number of adjoining local authorities entered into an agreement to pay a retaining fee each year towards the upkeep of a smallpox hospital, the payment to be based on census population. A further charge is made for the maintenance of each patient sent into the hospital for treatment.

The following tables, prepared by the medical staff of each of the city hospitals show the number of patients admitted, the nature of the illness in each case and the results of treatment at each of the eight hospitals during the year 1931:—

CITY HOSPITAL NORTH, NETHERFIELD ROAD.

Visiting Physician, Dr. R. I. RICHARDSON.

Resident Physician, Dr. E. SEYMOUR SMITH.

DISEASES.	Remaining Dec. 31st, 1930.	Admitted during the year.	Transferred from other City Hospitals.	Total under Treatment during the year.	Transferred to Convalescent Hospital.	Transferred to other City Hospitals.	Discharged Cured.	Remaining at end of year.	Died within 48 hours of Admission.	Total Deaths.	Total Mortality per cent. of Admissions.
Scarlet Fever.	85	646	6	737	6	—	645	85	—	1	0.15
Enteric Fever.	—	—	—	—	—	—	—	—	—	—	—
Diphtheria ...	48	282	—	330	—	—	266	48	3	16	5.67
Measles ...	1	6	—	7	—	—	7	—	—	—	—
Whooping Cough ...	—	2	—	2	—	—	2	—	—	—	—
Other Diseases	4	86	—	90	—	3	73	10	—	4	4.6
Isolation and Observation Cases ...	4	28	—	32	—	—	27	5	—	—	—
Totals ...	142	1050	6	1198	6	3	1020	148	3	21	2.0

CITY HOSPITAL SOUTH, GRAFTON STREET.

Visiting Physician, Dr. H. A. CLARKE.

Resident Physician, Dr. RITA HENRY.

DISEASES.	Remaining Dec. 31st, 1930	Admitted during the year.	Transferred from other City Hospitals.	Total under Treatment during the year.	Transferred to Convalescent Hospital.	Transferred to other City Hospitals.	Discharged Cured.	Remaining at end of year.	Died within 48 hours of Admission.	Total Deaths.	Total Mortality per cent. of Admissions.
Scarlet Fever.....	64	264	—	328	3	—	290	32	—	3	1.1
Diphtheria	20	325	—	345	—	—	280	46	4	19	5.84
Measles	—	7	—	7	—	—	3	—	3	4	57.1
Other Diseases.....	3	60	—	63	—	—	58	3	1	2	3.3
Isolation & Obser- vation Cases	5	15	—	20	—	—	13	7	—	—	—
Totals	92	671	—	763	3	—	644	88	8	28	4.17

CITY HOSPITAL EAST, MILL LANE, OLD SWAN.

Visiting Physician, DR. H. A. CLARKE.

Resident Medical Officer, DR. FRANCES WEIGHTMAN.

DISEASES.	Remaining Dec. 31st, 1930.	Admitted during the year.	Transferred from other City Hospitals.	Total under Treat- ment during the year.	Transferred to Convalescent Hospital.	Transferred to other City Hospitals.	Discharged.	Remaining at end of year.	Died within 48 hours of Admission.	Total Deaths.	Total Mortality per cent. of Admissions.
Scarlet Fever.....	—	—	—	—	—	—	—	—	—	—	—
Enteric Fever	—	—	—	—	—	—	—	—	—	—	—
Diphtheria.....	168	1144	—	1312	—	—	1102	148	17	62	5.4
Measles	—	—	—	—	—	—	—	—	—	—	—
Other Diseases	3	92	—	95	—	10	79	3	2	3	3.3
Isolation and Obser- vation Cases ...	—	—	—	—	—	—	—	—	—	—	—
Totals.....	171	1236	—	1407	—	10	1181	151	19	65	5.3

CITY HOSPITAL, FAZAKERLEY.

Medical Superintendent, DR. C. RUNDLE.

Principal Resident Medical Officer, DR. A. E. HODGSON.

Assistant Resident Medical Officers, DRs. C. ABERNETHY and L. DENIL.

DISEASES.	Remaining Dec. 31st, 1930.	Admitted during the year.	Transferred from other City Hospitals.	Total under Treatment dur- ing the year.	Transferred to Convalescent Hospital.	Transferred to other City Hospitals.	Discharged Cured.	Remaining at end of year.	Died within 48 hours of Admission.	Total Deaths.	Total Mortality per cent. of Admissions
Scarlet Fever .	32	227	8	267	—	26	211	27	1	3	1.3
Enteric Fever..	3	8	—	11	—	—	9	1	—	1	12.5
Diphtheria.....	126	653	14	793	—	58	586	120	10	29	4.4
Smallpox	—	—	—	—	—	—	—	—	—	—	—
Measles	27	109	9	145	—	13	122	—	5	10	9.2
Whooping Cough.....	4	96	—	100	—	—	69	15	4	16	16.6
Phthisis	—	—	—	—	—	—	—	—	—	—	—
Other Diseases.	60	609	20	689	—	37	497	85	18	70	11.1
Isolation and Observation Cases.....	—	—	—	—	—	—	—	—	—	—	—
Totals.....	252	1702	51	2005	—	134	1494	248	38	129	7.6

CITY HOSPITAL, FAZAKERLEY ANNEXE.

Medical Superintendent, Dr. C. RUNDLE.

Resident Medical Officer, Dr. E. A. BURNS.

DISEASES.	Remaining Dec. 31st, 1936.	Admitted during the year.	Transferred from other City Hospitals.	Total under Treatment dur- ing the year.	Transferred to Convalescent Hospital.	Transferred to other City Hospitals.	Discharged Cured.	Remaining at end of year.	Died within 48 hours of Admission.	Total Deaths.	Total Mortality per cent. of Admissions.
Scarlet Fever.....	35	165	6	206	—	16	164	26	—	—	—
Enteric Fever	1	1	—	2	—	—	2	—	—	—	—
Diphtheria	94	345	42	481	—	7	398	47	6	29	8.4
Measles	—	34	2	36	—	7	29	—	—	—	—
Whooping Cough ...	—	111	9	120	—	12	60	29	4	19	17.1
Other Diseases.....	13	185	18	216	—	2	183	21	2	10	5.4
Isolation and Observation Cases	—	—	—	—	—	—	—	—	—	—	—
Totals	143	841	77	1061	—	44	836	123	12	58	6.9

CITY HOSPITAL, SPARROW HALL.

Medical Superintendent, DR. C. RUNDLE.

Resident Medical Officer, DR. E. HARDING.

DISEASES.	Remaining Dec. 31st, 1930.	Admitted during the year.	Transferred from other City Hospitals.	Total under Treatment during the year.	Transferred to Convalescent Hospital.	Transferred to other City Hospitals.	Discharged Cured.	Remaining at end of year.	Died within 48 hours of admission.	Total Deaths.	Total Mortality per cent of Admissions
Scarlet Fever.....	—	25	36	61	—	2	30	29	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—	—
Whooping Cough...	—	67	21	88	—	4	60	22	—	2	2.9
Diphtheria.	140	354	10	504	—	44	437	19	—	4	1.1
Measles	—	108	18	126	—	12	110	—	2	4	3.7
Other Diseases	—	126	21	147	—	23	95	29	—	—	—
Isolation and Observation Cases	—	—	—	—	—	—	—	—	—	—	—
Totals	140	680	106	926	—	85	732	99	2	10	1.4

FAZAKERLEY SANATORIUM.

Medical Superintendent, Dr. C. RUNDLE

Principal Resident Medical Officer, Dr. W. CRANE.

*Assistant Resident Medical Officers, Drs. B. J. ELLIOTT and
J. W. PICKUP.*

Radiologist, Dr. A. E. CONNOLLY.

DISEASE.	Remaining Dec. 31st, 1930.	Admitted during the year.	Transferred from other City Hospitals	Total under Treatment during the year.	Transferred to Convalescent Hospital	Transferred to other City Hospitals	Discharged.	Remaining at end of year	Died within 48 hours of Admission	Total Deaths
Tuberculosis	319	448	—	767	—	—	354	320	1	93

BROADGREEN SANATORIUM.

Medical Superintendent, Dr. H. R. MACINTYRE.

Senior Resident Medical Officer, Dr. O. F. THOMAS.

Assistant do. do. Dr. MARGT. FERRIER.

do. do. do. Dr. EDWARD WALSH.

do. do. do. Dr. LEONARD ANDERSON.

DISEASE.	Remaining 31st Dec., 1930.	Admitted during the year.	Total under Treatment during the year.	Transferred to Convalescent Hospital	Transferred to other Sanatoria.	Discharged.	Remaining at end of year	Died within 48 hours of Admission	Total Deaths
Tuberculosis	280	672	952	—	—	497	303	5	152

FAZAKERLEY HOSPITALS AND SANATORIUM.

REPORT OF THE MEDICAL SUPERINTENDENT.

FAZAKERLEY HOSPITALS.

During the year ended 31st December, 1931, 3,457 patients were admitted to the Fazakerley Hospitals (excluding the Fazakerley Sanatorium), a decrease of 369 as compared with 1930.

It will be seen from the accompanying statistical tables that the large number of patients admitted suffering from diphtheria as compared with other diseases, which was a feature of the Report for the year 1930, has persisted during 1931. The loss of life from this disease and the suffering entailed are particularly to be regretted in view of the protection which has been made available by simple inoculation, and it is hoped that the steps now being taken in the city to bring this measure to the notice of parents may result in its general adoption. During the year 1931 there have been protected against diphtheria at the Fazakerley Hospitals 77 members of the staff; none of these have developed diphtheria, although in close contact with that disease. There have also been inoculated 416 children, and it is gratifying to note that it is becoming increasingly common for the parents themselves to suggest this measure. In no instance has the slightest ill effect resulted, and, as far as is known, no child so protected has subsequently developed diphtheria.

An important factor in the causation of infectious disease generally is to be found in the presence of unhealthy *tonsils and adenoids*. The practice which has been adopted at these hospitals of dealing with these cases by operation has supplemented the efforts made by the School Medical Services in securing a healthy naso-pharynx and freedom from dangerous complications of disease of that region. The operation for removal of tonsils and adenoids has been performed upon 182 patients as follows:—

Diphtheria	...	...	...	...	...	101
Diphtheria Carriers	...	...	...	...	...	25
Scarlet Fever	...	...	...	...	...	34
Tuberculosis	...	...	...	...	...	22

In addition many miscellaneous operations were performed upon the throat, nose and ear.

CUTANEOUS ANTHRAX.

It will be observed that the number of cases treated is less than the average for the preceding years. The type of disease has, however, been severe, and has required large and repeated doses of serum in treatment. Case No. 51 of the series tabulated on page 164 necessitated no less than 1,820 c.c. of Anti-Anthrax Serum at a total cost of £21 3s. 11d.

TABLE A.

CUTANEOUS ANTHRAX.

A FURTHER SERIES OF CASES TREATED AT THE CITY HOSPITAL, FAZAKERLEY, DURING THE PAST YEAR, WITH ANTI-ANTHRAX SERUM, WITHOUT RECOURSE TO SURGICAL EXCISION OF THE LOCAL LESION.

Series No. cont'd from 1930.	Age.	Sex.	Occupation.	Days ill on admission.	Site of Infection.	Amount of Serum, in c.cs., injected daily.	Clinical Remarks.	Result.
51	29	M.	Horse, &c., Slaughterer.	6	Below right ear.	$\overbrace{300 (.3), 300, 300, 150}^{270 (.4), 300, 200.}$	Moderate toxæmia. Severe and extensive swelling—from ear to nipple. Dysphonia and dysphagia. Large area of infection.	Recovery.
52	31	M.	Tannery hand.	6	Back of neck.	360, 250 (.2) 200.	Moderately toxic.	Recovery.
53	33	M.	Dock checker.	4	Back of neck.	100, 160.	Comparatively mild. Had had 10 c.cs. serum given as prophylactic two days before at the Royal Infirmary.	Recovery.

Groups of figures bracketed together denote injections made in the one day.
 Decimal figures in parenthesis signify grammes of Neokharsivan injected with the serum.
 All serum, etc., was given intravenously.

TABLE B.

OTHER DISEASES.

Other Diseases admitted during 1931 to the City Hospital, Fazakerley, the City Hospital Annexe, and the City Hospital, Sparrow Hall :—

Disease.	Admitted.	Died.
Varicella	156	—
Tonsillitis	132	—
" Chronic	19	—
Erysipelas	114	7
Mumps	74	—
Rubella	30	—
Paratyphoid Fever A	1	—
" " B	19	1
Cerebro-Spinal Fever	12	9
Anthrax	3	—
Tetanus	1	1
Broncho-pneumonia	26	18
Lobar Pneumonia	9	1
Bronchitis	12	—
Laryngitis	1	—
Influenza	4	1
Enteritis	8	—
" Infective	4	4
Food Poisoning	2	—
Vincent's Angina	2	—
Pre-tracheal Abscess	1	—
Retro-pharyngeal Abscess... ..	3	—
Pharyngitis	5	—
Parotiditis	1	—
Adenitis, Lymphatic	9	—
Meningitis, Tuberculous	11	11
" Pneumococcal	1	1
" Streptococcal	1	1
" Serous	1	—
Encephalitis Lethargica	8	1
Polio-Encephalitis	1	—
Cerebral Haemorrhage	1	1
Meningeal "	1	1
Cerebral Tumour	1	—
Carbuncle	8	—
Furunculosis... ..	2	—
Cellulitis	12	2
Mastoid Abscess	1	—
Mastoiditis	2	—
Otitis Media... ..	3	1
Septicaemia	3	1
Pyæmia	1	1
Erythema	18	—
Eczema	2	—
Impetigo	5	—
Scabies	8	—
Lichen	1	—
Sudamina	3	—
Urticaria	8	—
Dermatitis	5	—
Pemphigus	1	—
Carried forward...	787	63

Disease.								Admitted.	Died.
Brought forward...								787	63
Appendicitis...	...	...	...	...	...	...	...	6	1
Acute Nephritis	...	...	...	...	...	...	...	1	—
Pulmonary Tuberculosis	...	...	...	...	...	...	...	1	—
Cancer of Pylorus	...	...	...	...	...	...	...	1	—
Constipation...	...	...	...	...	...	...	...	1	—
Diabetes Mellitus	...	...	...	...	...	...	...	1	1
Ulcerative Stomatitis	...	...	...	...	...	...	...	2	—
Rhinitis	...	...	...	...	...	...	...	1	—
Rheumatism, Muscular	...	...	...	...	...	...	...	2	—
Syphilis	...	...	...	...	...	...	...	3	—
Vaccinia	...	...	...	...	...	...	...	1	—
Purpura Haemorrhagica	...	...	...	...	...	...	...	1	1
Malaria	...	...	...	...	...	...	...	2	—
Conjunctivitis	...	...	...	...	...	...	...	1	—
Scarlet Fever and Diphtheria	...	...	...	...	...	...	...	17	—
“ “ “ Pertussis	...	...	...	...	...	...	...	6	—
“ “ “ Measles	...	...	...	...	...	...	...	3	—
“ “ “ Mumps	...	...	...	...	...	...	...	1	—
Diphtheria and Pertussis	...	...	...	...	...	...	...	12	—
“ “ Rubella	...	...	...	...	...	...	...	2	—
“ “ Varicella	...	...	...	...	...	...	...	1	—
“ “ Measles	...	...	...	...	...	...	...	16	3
Measles and Pertussis	...	...	...	...	...	...	...	3	—
“ “ Varicella	...	...	...	...	...	...	...	1	1
Diphtheria Contact	...	...	...	...	...	...	...	2	—
Scarlet Fever Contact	...	...	...	...	...	...	...	2	—
Diphtheria Carrier	...	...	...	...	...	...	...	22	—
Miscellaneous	...	...	...	...	...	...	...	27	—
TOTAL								926	70

The above analysis of cases treated under the heading “Other Diseases” is of interest. These are all cases which for reasons of safety to themselves and others have necessarily to be treated under special conditions of isolation. These conditions require in their observance a highly trained staff, and present problems not commonly met with in isolation hospitals generally.

FAZAKERLEY SANATORIUM.

The total number of patients under treatment at Fazakerley Sanatorium during the year ended 31st December, 1931 was 767. Of these 448 were admitted during the year and 319 were cases which had remained over from the previous year.

X-RAY DEPARTMENT.

During the year 1931, 1,392 screen examinations were made, and 1,823 films taken. A growing feature of this work is the large number of examinations made of persons suspected to be suffering from tuberculosis, and who for this reason come under the observation of the City Tuberculosis Medical Officers. In a considerable proportion of these cases it has been possible to arrive at a definite and conclusive opinion, the importance of which it would be difficult to over-estimate in the interests of the individual and the Medical Officers concerned. The cost of this service has necessarily been considerable, involving an expenditure of approximately £82 in the supply of films alone for the out-patient department.

DENTAL TREATMENT.

The Visiting Dental Surgeon has carried out the following work during the year :—

Fillings	...	...	...	...	...	...	51
Extractions under local anæsthetic	...	...	...	...	...	...	252
Extractions without anæsthetic	...	...	...	...	...	...	2
Miscellaneous	...	...	...	...	...	...	128

Dental work has necessarily been restricted to those measures which are urgent and important to the patient's recovery. Dentures are not provided.

No change requiring comment has occurred in relation to the other special departments. The work, discussed in detail in the last Report, being carried out by the Laryngological Surgeon has been successful in an equal degree during the current year. The expenditure authorised by Committee in this respect has been amply justified. A definite increase in the application of surgical measures has resulted from the re-classification of patients suffering from tuberculosis in the various hospitals of the Committee, and it has been necessary to utilise the services of the Visiting Surgeon to a greater extent than formerly. There can be no doubt that the changes in allocation recently effected have been of very great advantage in providing facilities for the treatment of surgical tuberculosis.

BROADGREEN SANATORIUM.**REPORT OF MEDICAL SUPERINTENDENT.**

During the year, 672 patients were admitted. The age periods were as follows :—

Ages.	Under 5	5-15	15-25	25-35	35-45	45-55	Over 55	Totals.
Males ...	2	26	80	82	74	73	44	381
Females ...	1	29	116	69	36	30	10	291
Totals ...	3	55	196	151	110	103	54	672

Treatment by the injection of gold salts has been used more than in the previous year, and beneficial results have been obtained, even in some cases of advanced disease. The induction of artificial pneumothorax has been continued in those cases found suitable. Graduated exercise and work, however, under the supervision of the Medical Officers have been the main line of treatment. The majority of the patients are employed on garden work, but the increase in the size of the poultry farm has found occupation for a larger number both in carpentry and in tending the poultry. A few patients obtained experience in boot repairing.

Diagnostic methods have been extended to include the Mantoux Reaction, which has been helpful, especially in those children where diagnosis has been doubtful.

X-RAY DEPARTMENT.

The installation has again proved its value both in diagnosis and in the control of treatment. Use has been made of the intra-tracheal injection of Lipiodol for the purpose of excluding non-tuberculous pulmonary conditions.

DENTAL TREATMENT.

The visiting Dental Surgeon has treated patients chiefly with a view to the eradication of Sepsis, and has performed 273 extractions and 23 miscellaneous operations, including scalings and fillings.

RECREATION.

Patients have freely availed themselves of the facilities provided, such as bowls, billiards, croquet and putting. The library has been well patronised and its size increased by gifts from various sources. Concert parties have given excellent performances during the winter months which have been greatly appreciated.

SANATORIUM SCHOOL.

During the year, 14 girls and 20 boys were admitted, and 17 girls and 23 boys left. The average number on the roll for the year was 33. The work has been on similar lines to previous years, morning sessions being devoted to arithmetic, English, etc., and afternoons to handwork. The latter has included canework, raffia, rug-making and fretwork. Instruction has also been given in the making of bead ornaments and paper flowers, whilst the older children have been taught upholstery. The scholars have taken an increased interest in the curriculum, evidenced by a desire to continue their school work in the Wards. School drill has been an innovation during the year. An exhibition of handwork and the Annual Christmas Concert were both successes.

CITY HOSPITALS AND SANATORIA.
STATEMENT OF ADMISSIONS, DISCHARGES, DEATHS, AND TRANSFERS.

Hospital or Sanatorium.	Remaining Dec. 31st, 1930.	Admitted	Trans- ferred to	Dis- charged	Trans- ferred from	Died.	Remaining Dec. 31st, 1931.
Broadgreen Sanatorium	280	672	...	497	...	152	303
Fazakerley Sanatorium	319	448	...	354	...	93	320
City Hospital, Fazakerley	252	1,702	51	1,494	134	129	248
Sparrow Hall Hospital	140	680	106	732	85	10	99
Fazakerley Annexe	143	841	77	836	44	58	123
City Hospital North	142	1,050	6	1,020	9	21	148
City Hospital East	171	1,236	...	1,181	10	65	151
City Hospital South	92	671	...	644	3	28	88
TOTAL	1,539	7,300	240	6,758	285	556	1,480

TRANSFERRED HOSPITALS AND INSTITUTIONS.
STATEMENT OF ADMISSIONS, DISCHARGES, BIRTHS, DEATHS, AND TRANSFERS.

Hospital or Establishment	Remaining Dec. 27th, 1930	Admitted.	Trans- ferred to	Born.	Dis- charged.	Trans- ferred from	Died.	Remaining Dec. 26th, 1931.
Walton Hospital	1,500	13,662	303	1,410	13,069	770	1,689	1,347
Belmont Road Institution	1,431	4,537	732	...	4,484	529	393	1,294
Smithdown Road Hospital	990	6,400	465	1,015	6,090	682	1,046	1,052
Kirkdale Homes	1,295	220	626	...	433	151	235	1,322
Mill Road Infirmary	434	7,840	380	896	7,463	985	749	353
Alder Hey Hospital	831	6,071	344	...	4,812	861	781	792
Cottage Homes, Fazakerley	483	78	182	...	143	152	...	448
Olive Mount Children's Hospital	284	1,193	869	...	1,567	351	126	302
Shaw Street Boys' Home	61	18	38	...	42	12	...	63
Seafeld House	220	25	9	...	16	6	1	231
Cleaver Sanatorium	200	109	66	...	149	31	3	192
TOTAL	7,729	40,153	4,014	3,321	38,268	4,530	5,023	7,396
CASUAL WARDS— Belmont Road	11	5,285	...	...	5,289	...	...	7

TRANSFERRED HOSPITALS AND INSTITUTIONS.

By the operation of the Local Government Act, 1929, there were transferred to the possession of the Corporation of Liverpool twelve Institutions of various character. This transference became effective on April 1st, 1930, and, in accordance with the terms of the Act and the Administrative Scheme set up under this Act and approved by the Ministry of Health, these institutions were administered by the Public Assistance Committee until November, 1930.

There were already in the hands of the Corporation a number of isolation hospitals which did not differ essentially from the transferred institutions, and which are administered by the Port Sanitary and Hospitals Committee. These comprise six isolation hospitals for infectious cases and two sanatoria for pulmonary tuberculosis. In addition, the Port Sanitary and Hospitals Committee administer the Port Sanitary Hospital at New Ferry, which is the property of the Liverpool Port Sanitary Authority. Further, the Quarry Bank Maternity Home with 18 beds and the Carnegie Welfare Centre with 18 cots are administered by the Health Committee, and there are a number of residential or non-residential schools for physically and mentally defective children which are administered by the Education Committee, being mainly educational in character.

The transferred institutions and hospitals were accordingly, by resolution of the City Council, placed under the management of the Port Sanitary and Hospitals Committee after November, 1930.

The accompanying table shows the character of the transferred institutions as well as those previously in the hands of the Committee. From this table it will be noticed that not only have the institutions a varied use at the present time but that few of them are being used for the purpose for which they were built. The West Derby Union was re-formed in 1921 from three constituent bodies, the Select Vestry of the City of Liverpool, the Toxteth Board of Guardians and the West Derby Board of Guardians. Each of these bodies had one or more mixed Institutions, Brownlow Hill Infirmary in the case of the first, Smithdown Road Institution in the case of the second, and Walton Institution and Belmont Road Institution in the case of the third. There were also two Cottage Homes at Fazakerley and Olive Mount,

HOSPITALS, SANATORIA, AND INSTITUTIONS UNDER THE CONTROL OF THE PORT SANITARY AND HOSPITALS COMMITTEE.

Name of Institution.	Built by	Date of Foundation.	No. of Beds Dec. 31st, 1931.	Original User.	Present User.
Walton Hospital ...	West Derby Union	1864	2,012	General Mixed Institution	Mainly a General Hospital, but 264 male and female, healthy and infirm adults. (a) acute and subacute, medical surgical, gynaecological and special. (b) Adult pulmonary unsuitable for sanatorium treatment. (c) Maternity (d) Female Venereal Disease. (e) Isolation for minor infectious diseases in children. (f) Nursery for newly born and illegitimate children.
Belmont Road Institution	West Derby Union	1890	1,553	General Mixed Institution	Healthy adults including casuals, aged, infirm, and bedridden men and women. Skin diseases. Male Venereal Diseases. Casual Wayfarers.
Smithdown Road Hospital	Township of Toxteth Park	1858	1,211	General Mixed Institution	General Hospital. (a) Acute and subacute Medical, Surgical and Gynaecological and special cases. (b) Acute mental disease. (c) Chronic senile dementia (females). (d) Low grade mentally defective children. (e) Female epileptics. (f) Maternity. (g) A few healthy adults.
Kirkdale Homes ...	Liverpool Select Vestry	1843	1,437	School for Destitute Boys	Homes for aged and infirm men and women. Chronic and senile mental diseases (males). Chronic Encephalitis Lethargica (Males). Male Epileptics.
Mill Road Infirmary ...	West Derby Union	1838	811	General Mixed Institution, but present buildings intended only for Hospital use.	General Hospital for acute disease, Medical, Surgical, Gynaecological, Maternity and Special.
Alder Hey Children's Hospital	West Derby Union	1914	915	Infirm and Aged	General Children's Hospital. Medical, Surgical, Orthopaedic (including Surgical Tuberculosis.)
Olive Mount Children's Hospital	Liverpool Select Vestry	1903	520	Receiving Home for Children, Cottage Homes for Children.	Receiving Home for Children. Nursery for destitute children, 4 years. Acute infectious diseases (Measles, Whooping Cough, and Chicken Pox). Convalescent Children.
Cottage Homes, Fazakerley	West Derby Union	1887	591	Homes for Resident Children	Homes for Resident Children up to 14 years.
Shaw Street Home for Boys	Purchased by West Derby Union	Opened 1913	79	Private House	Home for working boys over 14 years.
Seaford House ...	Leased from Mersey Docks & Harbour Board by West Derby Union	Leased 1912	235	Hydropathic adapted for present use	Mentally defective children (mainly imbecile and ineducable of higher grade).
Cleaver Sanatorium ...	West Derby, L'pool, and Toxteth Park Joint Hospital Committee.	1903	200	Pulmonary Tuberculosis	Pulmonary Tuberculosis in Children.
Deysbrook House ...	Purchased by West Derby Union	1911	—	Private Home for Children	Not in use.
Broadgreen Sanatorium	Liverpool Select Vestry	1906	336	Infirm and aged	Sanatorium for Tuberculosis. Male and Female, Adult and Children. Pulmonary.
Fazakerley Sanatorium	Liverpool City Council	1920	264	Pulmonary Tuberculosis in Adults	Original use.
Fazakerley Isolation ...	Liverpool City Council	1906	300	All Types of Infectious Disease except Small Pox	Original use, and Tuberculosis, both Pulmonary and mixed Pulmonary and Surgical
Fazakerley Annexe ...	Liverpool City Council	1901	150	All Types of Infectious Diseases except Small Pox	Original use.
Sparrow Hall ...	Liverpool City Council	1917	160	Small Pox Hospital	Available for Small Pox, but mainly used for Infectious Diseases.
City Hospital North ...	Dr. Gee ...	1866	168	Infectious Disease	Scarlet Fever, Diphtheria and Measles.
City Hospital East ...	Wavertree Urban District Council	1888	156	Infectious Disease	Diphtheria.
City Hospital South ...	Liverpool City Council	1884	101	Infectious Disease	Scarlet Fever, Diphtheria, and Measles.
			11 199		

HOSPITALS, SANATORIA AND INSTITUTIONS IN PORT SANITARY AND HOSPITAL

Name of Institution	Year of Foundation	No. of Beds in 1901
Walter Hospital	1891	2012
Belmont Road Institution	1888	1,522
Wentworth Road Hospital	1858	1,211
Richards House	1847	1,107
Mill Road Infirmary	1838	811
Abbey Hill Children's Hospital	1914	615
St. James Children's Hospital	1892	520
St. George's Hospital	1870	500
St. George's Hospital	1870	500
Collins House	1867	501
St. James Home for Boys	Opened 1912	70
St. James Hospital	Opened 1912	525
St. James Hospital	1895	500
St. James Hospital	1911	—
St. James Hospital	1908	250

and in addition three buildings, the Kirkdale Homes, Alder Hey Infirmary and Highfield Infirmary (now Broadgreen Sanatorium) had been built or adapted for the use of the aged and infirm.

The altered needs of the re-constituted West Derby Union led to a much more complete classification of the user of the buildings, the main necessity being the provision of more hospital beds. This process was greatly accentuated by several changes in social legislation and procedure. More extended outdoor relief and the provision of unemployment benefit has led to lesser demand for the accommodation of healthy adults and children; the granting of old-age and widows' pensions has further diminished this demand.

On the other hand, the National Insurance Acts and the Associated Tuberculosis Scheme and the work of School Medical Inspection and that carried out under the Maternity and Child Welfare Acts, have all led to earlier and more extensive use of hospital beds. Recently the inauguration of the Penny-in-the-Pound Fund in aid of the voluntary hospitals has increased these demands. There has been no proportionate increase in the provision of voluntary hospital beds except in certain limited directions. There has resulted, therefore, a steady alteration of buildings originally provided for healthy or merely infirm adults, and for healthy children, into hospitals. Since the passing of the Representation of the People Act, 1918, the reluctance on the part of the average working man and his family to enter the mixed Institution has been gradually broken down. By the conversion of these establishments into up-to-date Municipal Hospitals this reluctance to utilise the services offered has practically disappeared.

To meet these changing needs Alder Hey Infirmary is now used for children and Highfield Infirmary has become the Broadgreen Sanatorium, Brownlow Hill Infirmary has been closed, and the Walton Institution has been mainly converted into a hospital at a cost of several hundred thousand pounds. During 1931 two further changes have been effected. The Wavertree Cottage Homes have become the Olive Mount Children's Hospital; and Smithdown Road Institution has become a general municipal hospital under the title of the Smithdown Road Hospital. The Olive Mount Children's Hospital is now under the charge of a fully qualified Matron and Deputy Matron; and from January 1st, 1932, Smithdown Road Hospital will

be placed under a Medical Superintendent and qualified Matron and Steward instead of being supervised by a Master, a Matron, who was not a trained nurse, a Superintendent Nurse and a Visiting Medical Officer. Corresponding changes in the nursing staffs are being made coincidentally.

This alteration in the user of the institutions is accompanied by a reduction in the total number of beds available in the institutions. Conversion of "house" accommodation, that is, wards occupied by the able-bodied or infirm, into hospital wards, operating theatres, X-Ray rooms, etc., inevitably reduces the total number of beds. Thus in January, 1931, there were 9,892 total beds in transferred institutions, and in December these had fallen to 9,620, a reduction in number of 272 beds. The figure for the end of the year includes 130 beds in the old mental block at Mill Road Infirmary which are not at present occupied, so that the real decrease is 402. In January and February there was a serious epidemic of influenza and the available accommodation in the City was strained to the utmost. The reduction in beds has reached a point beyond which any further lessening in numbers will be dangerous. An addition to the "house" accommodation at Belmont Road has been effected by certain re-arrangements of the casual wards. A slight increase in accommodation at Kirkdale will be effected by conversion of the mattress-making rooms into a ward for cases of encephalitis lethargica, but these changes will be more than counterbalanced by the reduction of beds in Walton Hospital as a result of adaptations now in progress.

As an alternative to extension of buildings there is the method of making better use of the existing hospital beds, thus reducing the average length of stay in hospital and securing a more rapid turnover. This method lies in (a) Admission departments which serve as a filter to cases on admission. (b) Continuation departments which allow of a case being discharged to his or her home with instructions to attend daily or at less frequent intervals. (c) Earlier diagnosis and more rapid and efficient treatment. With these objects the non-resident medical, surgical, and pathological services in the hospitals have been strengthened in several particulars, and the hospitals generally improved in equipment, whilst the resident medical and nursing staff have in some cases been augmented. In this way the efficiency of existing buildings has been increased.

APPROPRIATION OF HOSPITALS.—It was the ultimate purpose of the Local Government Act, 1929, that those services that could be provided otherwise than by the Poor Law should eventually be so provided. This purpose envisages the eventual severance of the provision of medical aid from the relief of destitution, with which it is so often closely associated.

The final measure to give effect to this severance of functions is the appropriation of hospitals, so that medical and nursing assistance is provided under the Public Health Acts. It is up to this step that the re-classification of buildings and re-allocation of their user finally leads. The necessary preliminaries to this step have been taken in relation to Alder Hey Hospital, sanction to the appropriation of which was received from the Ministry of Health; this takes effect from April 1st, 1932, and also for Mill Road Infirmary which will be appropriated from June 1st, 1932.

CLASSIFICATION OF CASES.—The persons seeking or needing the assistance of the institutions under the City Council fall into every possible category from the newborn infant to extreme old age and from the healthy adult to those afflicted with every type of physical or mental disorder. To meet this variation in human needs the following classification of cases is adopted :—

(1) Acute and sub-acute sick adults.

- (a) medical.
- (b) surgical (operation or orthopædic cases, etc.).
- (c) gynæcological.
- (d) skin.
- (e) eye, ear, nose and throat cases.
- (f) venereal disease.
- (g) tuberculosis.
- (h) infectious disease.

(2) Children under *a*, *b*, *d*, *e*, *g*, or *h*.

(3) Maternity.

- (a) ante-natal.
- (b) normal.
- (c) complicated labour.

(4) Mental.

- (a) observation and transitional cases.
 - (b) chronic confirmed disease, mainly dementia.
 - (c) mentally defective children and adolescents.
 - (d) epilepsy with or without mental aberration.
 - (e) chronic encephalitis lethargica.
- (5) Chronic physical disease in adults, the aged and infirm, incontinent, paralytic, etc.
 - (6) Healthy children and adolescents temporarily or permanently in need of institutional care.
 - (7) Healthy adults.
 - (8) Casual wayfarers.

The institutions receiving these several categories of case are shown in the table facing page 172. Although extensive provision is made for mentally afflicted and mentally defective persons, by the Lancashire Mental Hospitals Board, and for many types of acute and sub-acute disease by the voluntary hospitals there is no type of case for which the City Council may not be called upon to provide at short notice. Acting as a poor-law authority no sick and destitute person may be refused admission if this is sought through the appropriate channels.

MATERNITY WARDS.—A striking feature of the change in the nature of the services provided by the Board of Guardians in the transferred hospitals was the increase in the number of births taking place in these institutions, which rose from 808 in 1920 to 3,464 in 1931. This increasing demand was accentuated by the need for ante-natal care which is so important a feature in all endeavours to reduce the mortality in childbirth to which allusion is made elsewhere in this report (see page 112). As there set out it will be seen there has been a complete provision of ante-natal clinics throughout the City and each of the three hospitals with maternity wards (Walton, Mill Road and Smithdown Road) has an associated ante-natal clinic under the control of the specialists, Mr. St. George Wilson and Mr. Walsh, in charge of these wards.

To provide for this expanding service an increase in accommodation became necessary. A maternity unit with 70 beds was equipped at Smithdown Road Hospital and has proved very serviceable. It

is specially at Walton Hospital that pressure has been felt, the births there increasing from 323 in 1920 to 1,493 in 1931. Plans were prepared by the City Surveyor for a maternity hospital with 100 beds and all necessary adjuncts which could be expanded to 150 beds if the necessity should arise. The cost, for 100 beds, would have been about £50,000, and with the financial conditions prevailing this was found to be economically impossible. Neither humanity nor legal obligations will permit the turning away of a woman who is actually in labour. The pressing needs of the moment, therefore, led to an overflow of cases from the maternity block into a neighbouring building known as "the Bungalow." The continued expansion will at an early date lead to the complete absorption of this building for maternity purposes, which is capable of adaptation at a relatively low cost.

The maternity ward in Mill Road Infirmary, situated in the most densely populated part of the city, has likewise been very overcrowded, and maternity cases have had to be accommodated in medical wards. It became necessary, early in 1932, to occupy a second ward for this purpose. There is no room for isolation or classification of cases suffering from or likely to develop puerperal pyrexia. Proposals have been made and submitted to the Ministry of Health to enclose a balcony and thus provide a 7-bed isolation ward at a cost of about £950.

It is useful to note that puerperal sepsis is very rare in women confined in the City Hospitals. Among the 3,464 births which took place in 1931 there were three cases of puerperal fever with one death, these giving rates of 0·86 and 0·29 per 1,000 births; the corresponding figures for the whole city were 54 cases with 20 deaths, equal to a case rate of 2·9 and a death-rate of 1·07 per 1,000 births; the rates in the City Hospitals in each instance being less than a third of those appertaining to the city as a whole.

MENTAL DISEASE AND MENTAL DEFICIENCY.—The beds available for mental cases amounted at the end of 1931 to 1,154, of which 565 were in Smithdown Road Hospital, 354 in the Kirkdale Homes, and 235 in Seafeld House, for mentally defective children and adolescents.

During the year the beds, 130 in number, in Mill Road Infirmary, formerly used for acute cases, were disused and these cases are now received into Smithdown Road Hospital. The building at Mill Road

was originally constructed for the reception of "fever" cases—presumably typhus fever—and was quite unsuited for the modern treatment of mental cases.

Two blocks at Smithdown Road Hospital, now known as Wards 25 and 26, were rendered available for acute mental cases. This necessitated the conversion of a portion of the "House" into a block (known as Ward 27) for the reception of chronic senile and epileptic women. A small airing ground was provided immediately adjacent to Ward 27.

Wards 25 and 26 were converted for the treatment of acute mental cases, and are of a suitable character for this class of work. Additional padded rooms have been provided for violent cases. The essentials of treatment of mental disease are: Firstly—facilities for diagnosis, such as X-Ray and pathological examinations and the services of consultant medical specialists. Secondly—the provision of adequate facilities for the treatment of physical defects causing or aggravating the mental disease. These are available at Smithdown Road in its capacity of a general hospital. Thirdly—the services of a mental specialist or psychiatrist; the Medical Superintendent who will assume office on January 1st, 1932, has this essential experience. Fourthly—there must be a suitably trained nursing staff, male and female. By certain re-arrangements these Wards will shortly be staffed by fully qualified senior mental nurses, and it is expected that approval will shortly be received from the General Nursing Council and the Royal Medico-Psychological Association for the hospital to act as a training school for junior mental nurses.

A Psychiatrist, Dr. Rankin, was appointed to Walton Hospital in March, 1931, and has been carrying out very valuable work there.

The accommodation at Kirkdale Homes for senile cases and for cases of chronic encephalitis lethargica is not altogether satisfactory. Two proposals which will ameliorate the conditions are now being carried out, namely:—

(a) The provision of additional day-room accommodation for epileptic cases.

(b) The separation of cases of encephalitis by the adaptation of the building used for mattress-making into a small ward with dormitory, day-room and sanitary annexes.

Male and female epileptics are received into Kirkdale Homes and Smithdown Road Hospital respectively. Neither of these can be considered really suitable. The epileptic patients would be better provided for in country surroundings, and in 1912 the Liverpool Select Vestry constructed a home for 300 epileptic cases at Maghull. It was, however, taken over for military purposes and is now in the hands of the Ministry of Pensions. Should the opportunity arise it is very desirable that this hospital should revert to its original purpose. The return of this building to the use for which it was intended would not only greatly improve the condition of life of these epileptic patients, but would release an equivalent number of valuable hospital beds.

ACCOMMODATION FOR CHILDREN.—The main provision for sick children is at Alder Hey Hospital, where there are over 900 beds. A sick bay for nurses with 15 beds has recently been opened. As indicated elsewhere this building was originally intended for the aged and infirm, and to adapt it for a children's hospital certain structural additions have had to be made.

(a) Additional nursing home built in 1926 and providing 70 beds. A further extension of about 100 beds is still required.

(b) An operating theatre. During the War a wooden structure was erected and did valuable work. It has now been replaced by a modern operating theatre with the necessary adjuncts, which was completed during the year.

(c) X-Ray Room with up-to-date apparatus, also completed in 1931.

(d) Accommodation for massage, electro-therapeutic and light treatment and for the orthopaedic, eye and ear, nose and throat specialists, and for the dentist who had previously been provided with make-shift quarters.

These needs have been met by the erection of a building, the ground floor of which will serve also as an admission and continuation department. There are 56 cubicles on the first and second floors for the temporary isolation of children with febrile conditions or who are known to have been in contact with infectious disease. It is hoped that this provision will considerably reduce the introduction of infection which

is one of the greatest administrative difficulties in hospitals for children. The completion of this block in 1932 will make Alder Hey Hospital structurally one of the leading children's hospitals in this country.

The hospital is especially well provided for orthopædic treatment (surgical tuberculosis, deformities, etc.), extensive balconies permitting the free use of open-air methods, and there is a highly qualified staff of visiting specialists in orthopædics, surgery, and the specialities detailed above. During the year a change was made in the appointment of senior resident medical officer, and the medical staff was strengthened by an additional junior resident. A clinic for the continuation treatment of rheumatic cases was started during 1931 and is a valuable addition. There is here a wide scope for the prevention of rheumatic heart disease, which is so serious a disease in later life. Closer co-operation with the Child Welfare and School Medical Departments has been established.

PATHOLOGICAL SERVICES.—Progress in medicine is increasingly along the lines of earlier and more exact diagnosis, and in the control of methods of treatment by accurate observations and measurements. Such work is largely bacteriological, pathological or bio-chemical in nature, and no hospital can be run efficiently without provision being made for this work.

During the year 1931 new laboratories were equipped in Alder Hey Hospital and Smithdown Road Hospital and a laboratory attendant with a training in pathology was appointed to the latter.

At Walton Hospital a whole-time medical pathologist, Dr. T. B. Davie, was appointed and commenced his duties in October. His services have greatly added to the efficiency of the hospital.

X-RAY SERVICES.—For some years the policy pursued by the former Guardians was to centralize X-Ray work by maintaining an up-to-date plant at Mill Road Infirmary and only smaller units at the other Hospitals. In practice this was found to be only partially successful for various reasons. In view of the importance of radiology in connection with modern methods of diagnosis and treatment it is necessary

that efficient apparatus and expert services should be available at each of the general hospitals.

Equipment. At the Walton Hospital the Sub-Committee suggested alterations to buildings and the provision of new apparatus for diagnostic work with deep therapy apparatus for the treatment of cancer. Having regard, however, to the fact that the Cancer Hospital in Myrtle Street is being rebuilt, and when completed will have the most up-to-date facilities for deep therapy work, it was thought inadvisable to duplicate this provision in the City, and a Committee has been appointed to confer with representatives of the Cancer Hospital on the subject. With this alteration the Walton Scheme is going forward, and it is hoped that efficient diagnostic plant will be installed at an early date at an estimated cost of £1,600.

At Alder Hey Hospital a Scheme had already been approved for the provision of a new X-Ray Department and Plant. This was installed during the year and is now working satisfactorily.

The Plant at the Smithdown Road Hospital is not up to the standard required for a modern hospital, and reports have been requested with a view to the matter being dealt with at an early date.

Certain minor additions to plant have been made at Mill Road Infirmary and Belmont Road Institution during the year.

Personnel. Dr. F. Swanson Hawks is at present part-time Visiting Radiologist to the several transferred hospitals. With the continued growth and importance of radiological work it is doubtful whether the present services under this heading are sufficient, and when conditions admit, no doubt this matter will receive consideration. Certain alterations with regard to the conditions of appointment of radiographers will also become necessary.

MEDICAL OUTDOOR RELIEF.

For the purposes of medical outdoor relief, the City is divided into twenty-five districts, but in some of the districts more than one medical officer is employed. Generally speaking the district medical officers are general practitioners residing in the area where they work, and they are all engaged on a part-time basis.

DISTRICT MEDICAL OFFICERS.

During the year ended 31st December, 1931, the 25 District Medical Officers have attended to 115,761 cases at their Surgeries, and 14,226 cases at the homes of the applicants.

This is an increase on the previous year of over 25,000 cases at the Surgeries and 1,500 cases at the homes of the applicants.

A list of the District Medical Officers is given below, viz. :—

Relief Districts.	Medical Officers.	Residence.
No. 1	G. Tyndall Harris	Stanley Road.
„ 2	T. J. Marner	Stanley Road.
„ 3	E. P. Maloney	Everton Brow
„ 4	A. Macaulay.	Norton Street.
„ 5	D. P. Finn	Percy Street
„ 6	J. J. Barry	Bentley Road
„ 7	B. Brickman	North Hill Street
„ 8	{ J. F. Roberts F. C. Robb	Island Road, Garston Woolton Street, Woolton
„ 9	D. P. H. Gardiner	Bagot Street
„ 10	A. H. Pinder	Corinthian Avenue
„ 11	S. P. Mort	Donard Lodge, Walton
„ 12	C. A. Robinson	Boundary Street
„ 13	I. C. Edwards	Anfield Road
„ 14	C. T. Cullimore	Queens Road
„ 15	E. J. Murphy	Burlington Street
„ 16	H. R. Chibber	Prescot Drive.
„ 17	W. M. Scott	Norton Street
„ 18	T. Duncan	Mount Vernon
„ 19	G. V. C. Last	Rutland Avenue
„ 20	R. Gordon Barlow	Olive Mount, Wavertree
„ 21	{ W. H. Condell J. A. Mawson	Belmont Road Rupert Lane
„ 22	C. A. Robinson	Boundary Street
„ 23	{ R. Gordon Barlow C. T. Cullimore H. R. Chibber W. H. Condell	Olive Mount, Wavertree Queens Road Prescot Drive. Belmont Road
„ 24	E. M. N. MacAlpine	Townsend Avenue
„ 25	S. Hesselberg	Townsend Lane

CLASSIFICATION OF IN-PATIENTS WHO WERE DISCHARGED FROM OR WHO DIED IN TRANSFERRED INSTITUTIONS DURING THE YEAR ENDED 31st DECEMBER, 1931.

Disease Groups.	SMITHDOWN ROAD.		WALTON.		MILL ROAD.		ALDER HEY.		OLIVE MOUNT.		KIRKDALE HOMES.		BELMONT ROAD.		SEAFIELD.		CLEAVER SANATORIUM.		TOTAL		GRAND TOTAL
	Dis- charged.	Died.	Dis- charged.	Died.	Dis- charged.	Died.	Dis- charged.	Died.	Dis- charged.	Died.	Dis- charged.	Died.	Dis- charged.	Died.	Dis- charged.	Died.	Dis- charged.	Died.	Dis- charged.	Died.	
Acute Infectious Disease	346	41	965	100	245	136	684	106	465	126	—	—	580	53	—	—	—	—	3,285	562	3,847
Influenza	200	18	284	—	205	7	84	—	—	—	—	—	109	—	—	—	—	—	882	25	907
Tuberculosis—																					
Pulmonary	28	20	427	190	69	33	73	8	—	—	—	—	5	—	—	—	150	2	752	253	1,005
Non-Pulmonary	25	7	75	5	16	8	129	42	—	—	—	—	—	14	—	—	20	—	265	76	341
Malignant Disease	96	101	355	174	71	75	3	—	—	—	—	4	—	—	—	—	—	—	525	354	879
Rheumatism—																					
(1) Acute Rheumatism together with sub-acute Rheumatism and Chorea	50	1	137	—	53	4	405	17	—	—	—	—	—	—	—	—	—	—	645	22	667
(2) Non-articular manifestations of so-called "Rheumatism" (muscular rheumatism, fibrositis, lumbago and sciatica)	135	1	228	—	49	—	—	—	—	—	—	—	9	—	—	—	—	—	421	1	422
(3) Chronic Arthritis	58	2	292	—	74	—	2	—	—	—	—	—	—	—	—	—	—	—	426	2	428
Veneral Disease	17	3	221	3	23	11	4	—	—	—	—	—	183	8	—	—	—	—	448	25	473
Puerperal Pyrexia	7	—	113	—	10	1	—	—	—	—	—	—	—	—	—	—	—	—	130	1	131
Puerperal Fever—																					
(a) Women confined in hospital	—	—	2	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	2	1	3
(b) Admitted from outside	7	4	34	5	—	3	—	—	—	—	—	—	—	—	—	—	—	—	41	12	53
Other diseases and accidents connected with Pregnancy and Childbirth	215	33	781	22	198	39	—	—	—	—	—	—	—	—	—	—	—	—	1,194	94	1,288
Mental Diseases—																					
(a) Senile Dementia	142	102	79	—	107	29	—	—	—	—	54	176	—	—	—	—	—	—	382	307	689
(b) Other	170	13	270	—	1,202	38	17	—	—	—	46	8	—	—	20	—	—	—	1,725	59	1,784
Senile Decay	104	62	57	31	19	—	—	—	—	—	—	—	127	—	—	—	—	—	180	220	400
Accidental Injury and Violence	370	24	899	30	710	35	—	—	—	—	—	—	—	—	—	—	—	—	1,979	89	2,068
In respect of cases not included above :—																					
Disease of the Nervous System and Sense Organs	336	91	406	80	388	10	428	28	—	—	5	2	—	92	—	—	—	—	1,563	303	1,866
" " Respiratory System	673	189	1,573	364	553	32	1,094	247	—	—	—	—	—	27	—	—	10	—	3,903	859	4,762
" " Circulatory "	395	247	554	152	284	145	31	4	—	—	—	—	—	34	—	—	—	—	1,264	582	1,846
" " Digestive "	595	35	1,537	467	1,341	66	830	161	—	—	—	—	—	—	—	—	—	—	4,303	729	5,032
" " Genito-urinary,	382	31	790	149	557	60	161	—	—	—	—	—	—	—	—	—	—	—	1,890	240	2,130
" " Skin	182	6	542	—	238	6	101	—	—	—	—	—	2,232	37	—	—	—	—	3,295	49	3,344
Other Diseases	75	18	328	82	150	11	1,768	169	—	—	—	—	—	—	—	1	—	—	2,321	281	2,602
Mothers and Infants discharged from Maternity Wards and not included in above figures—																					
Mothers	1,202	—	1,418	—	1,010	—	—	—	—	—	—	—	—	—	—	—	—	—	3,630	—	3,630
Infants	1,925	—	1,339	—	862	—	—	—	—	—	—	—	—	—	—	—	—	—	3,226	—	3,226
TOTALS	6,835	1,049	13,706	1,854	8,434	750	5,814	782	465	126	105	190	3,118	392	20	1	180	2	38,677	5,146	43,823

SANITARY ADMINISTRATION.

SANITATION.

SANITARY ADMINISTRATION.

For the purpose of carrying out the requirements of the various Sanitary Acts of Parliament and the Orders, Bye-laws and Regulations made thereunder, the following staff of the Medical Officer of Health's Department has been employed during the year.

	Males	Females
*Chief sanitary inspector	1	—
*Deputy chief sanitary inspector	1	—
*Prosecuting sanitary inspectors	10	—
*District sanitary inspectors	36	—
*Notice servers	3	—
¹ Food inspectors... ..	11	—
*Inspectors under the Food and Drugs, etc., Acts ...	3	1
* „ of cowsheds and milkshops	2	—
* „ under the Shops Acts	2	1
* „ „ Factories and Workshops Acts ...	4	—
(These inspectors are also appointed under the Shops Acts.)		
² Smoke inspectors	3	—
³ Inspectors of Common Lodging Houses and Houses let in Lodgings	14	—
*Inspector of canal boats	1	—
³ Ambulance and disinfecting inspectors	11	—
Motor ambulance drivers	11	—
Rat catchers, &c.	11	—
Men engaged stripping walls and spraying infected houses, limewashing middensteads, etc. ...	31	—
Chief clerk	1	—
Clerical staff (permanent)	32	—
„ „ (temporary)	1	1
„ „ (health visitors, etc.)	—	10
„ „ (Tuberculosis branch)	3	10
Vaccination Officers	4	—
„ Officers' Clerks	4	—
⁴ Health visitors, school nurses, etc. (permanent) ...	—	84
⁴ „ „ „ „ (temporary) ...	—	17

	Males	Females
⁵ Inspectors under the Midwives Act	—	3
⁶ Ophthalmia Neonatorum nurses	—	2
Superintendent, health visitors and assistants at Infant Milk Centres (permanent)	1	13
Temporary assistants and cleaners at Infant Milk Centres	4	32
⁷ Nurses at Tuberculosis Institutes	—	7
Caretakers at Tuberculosis Institutes	2	—
„ Ford Street Mortuary	—	1
„ City Laboratories	1	—
Cleaners at City Laboratories	—	6
Staff at Seamen's Dispensary... ..	4	1
Women engaged cleansing verminous children	—	5

Day Nurseries, Maternity Home and Clinics.

Matrons	—	8
Deputy-matrons	—	8
Nurses and probationers	—	52
Domestic staff (including gardeners and cleaners)... ..	3	71
Seamstresses	—	4
Kindergarten mistress	—	1

Total number of staff	215	338
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In every case officers are selected for these positions whose previous training and occupation have been such as to fit them for the special duties they are called upon to discharge. Those marked * are required to hold a certificate affording evidence of adequate sanitary instruction. ¹have special training in each branch of the work, i.e., butchers, fishmongers, fruiterers, etc., and are also certified. ²hold Marine Engineer's First Class Certificates. ³all hold the Certificate of the Liverpool University School of Hygiene, the Royal Sanitary Institute or an equivalent thereto. ⁴fully-trained and Certificated nurses or other special qualifications. (The certificates usually held by the Health Visitors' Staff, in addition to the certificate of training as a nurse, are those of the Central Midwives' Board, the Liverpool University School of Hygiene, and either those of the Royal Sanitary

Institute or the Sanitary Inspectors' Examination Board, or both these certificates). ⁵registered midwives with special qualifying certificates. ⁶fully-trained nurses with special training in Ophthalmia Neonatorum. ⁷fully-trained nurses.

For details of the work carried out by the *Food Inspectors* and by the *Female Staff*, see Food Inspection Section (page 221), and Maternity and Child Welfare Section (page 89).

COMPLAINTS OF NUISANCES.

The district sanitary inspector visits, at the earliest possible moment, all premises where a nuisance is complained of, and on his report an informal notice is served upon the person responsible for the nuisance. If the informal notice is not complied with the matter is referred to the prosecuting inspector, upon whom is placed the responsibility of seeing that the nuisance is abated.

The number of occasions upon which the advice and assistance of the health department has been sought has decreased during the year. These applications fluctuate year by year; in 1910 they were 9,354; in 1920, 18,730; in 1925, 19,075; in 1926, 20,514; in 1927, 20,811; in 1928, 22,652; in 1929, 23,172; in 1930, 21,478, and in 1931, 20,636. As in former years, complaints in many cases were made to the department only after repeated requests addressed to the persons causing or allowing the nuisance, or to the owners or agents of property, had been ignored. A great deal of the time of the inspectors was taken up by these special examinations.

Requests to examine important public buildings and offices, as well as highly rented dwelling-houses, are numerous, and the application of the smoke test has in many cases brought to light defects in the drainage system.

During the year 27,732 nuisances were discovered as the result of complaints. Preliminary notices were served either on the owners or occupiers to remedy 23,828 nuisances. The remaining 3,904 nuisances came within the province of other departments, and were referred to those departments to be dealt with.

HOUSE-TO-HOUSE INSPECTION.

One of the most important duties placed upon Sanitary Authorities is that of house-to-house inspection. The Public Health Act provides that this should be done systematically, and the importance of the work is indicated by the extent to which house-to-house inspection is done within the city. The number of houses inspected during the year was 99,170.

The value of the work is also recognised by owners of property who prefer to receive all notices at the same time, thus avoiding the unnecessary expenditure which would result if the notices were served at different periods.

In the course of house-to-house inspection, 70,842 nuisances were discovered, to remedy which preliminary notices were served on either the owner or the occupier. A number of defects was also referred to other departments.

On re-inspection, the number of nuisances found not abated was 25,102, and statutory notices were served to remedy them. These were again re-inspected by the district inspectors, and those found not abated were referred to the prosecuting inspectors for further action.

The number of nuisances found by the district sanitary inspectors is shown in the following table, together with the character of the proceedings taken by the prosecuting sanitary inspectors to abate the nuisances :—

Number of complaints made by inhabitants...	...	...	20,636
„ nuisances discovered on above complaints	...	...	27,732
„ „ „ on house-to-house inspection	...	...	70,842
	Total	...	98,574
„ visits by district sanitary inspectors to re-inspect above nuisances	...	...	64,188
„ notices issued (owners)	...	...	61,269
„ „ „ (occupiers)	...	...	259
	Total	...	61,528

Number of visits to premises under observation	...	...	9,637
„ incidental calls	...	...	40,635
„ visits made by prosecuting inspectors to re-inspect nuisances	...	...	75,869
„ notes sent to comply with notices	...	...	5,674
„ informations laid	...	...	451
„ magistrates orders	...	...	243
„ fined	...	...	86
„ acquitted or withdrawn	...	...	122

All nuisances were subsequently found abated.

DEPARTMENTAL REFERENCES.

The co-operation which the Public Health Department receives from other departments of the Corporation is fully appreciated, and as a result many sanitary defects are brought to notice, and at once dealt with by the Sanitary Department. Were it not for this early intimation it is possible that defects might remain undiscovered until such time as the district inspector visits the premises in the course of house-to-house inspection.

REFERENCES FROM OTHER DEPARTMENTS.

From the City Engineer	...	...	4,749
„ „ Water Engineer	...	...	8,001
„ „ Lodging-house inspectors	...	...	8,718
„ „ Education Department (suspected infection in school children)	...	...	5,469

REFERENCES TO OTHER DEPARTMENTS.

The officers of the Health Department co-operate with other departments by referring to them matters which are outside the scope of the Health Department, such as waste of water, choked street gullies, defective street and passage pavements, dangerous walls, floors and roofs.

To the City Engineer	...	...	9,889
„ „ Building Surveyor	...	...	8,158
„ „ Water Engineer	...	...	9,176
„ „ Education Department (school children suffering from infectious diseases)	...	...	18,770
„ other departments	...	...	716

HOUSE-TO-HOUSE INSPECTION.

The systematic house-to-house visitation by the district male staff is shown in the following table:—

Number of street houses examined	97,553
„ court houses examined	1,617
Total ...	99,170
Number of apartments examined	510,674
„ houses where nuisances existed	37,350

INFECTED HOUSES.

The following table shows the number of houses visited where notifiable infectious diseases have occurred, with the number of visits to these houses, and to houses where cases of non-notifiable infectious diseases have been reported to the Health department by the Education department:—

Number of houses where infectious diseases occurred ...	23,617
„ visits to infected houses (notifiable cases) ...	23,189
„ visits to infected houses (school cases) ...	6,057
„ visits and re-visits to phthisis cases	6,334
„ enquiries <i>re</i> suspected smallpox contacts ...	7

COURT AND ALLEY EXAMINATIONS.

Number of inspections of courts and alleys	19,391
„ „ water closets	31,265
„ water closets found dirty, but afterwards cleansed by officers' instructions	19,103

CELLARS.

In view of the serious shortage of housing accommodation there is a tendency to re-occupy cellars as separate dwellings, many of which have been closed for several years; an annual inspection is therefore made of all cellars, and if any are found re-occupied, the usual notice is served.

EXAMINATION OF CELLARS AND CELLAR DWELLINGS.

Number of inspections of street cellars	20,817
„ found illegally occupied	172
„ of notices issued to cease letting or occupying...	334

The present position in regard to cellars is as follows:—

Number at present unoccupied	475
„ occupied as kitchens or wash-cellars	483
„ occupied as kitchens and separately let with the front parlour	115
„ permanently closed	423
„ demolished	19

*Number of cellars, occupied as separate dwellings, 31st December, 1931	99
---	----

OFFENSIVE TRADES.

There are 66 offensive trades carried on in the city, viz., 3 bone boilers, 9 dripping factories, 10 fat and tallow melters, 1 fell monger, 4 fertilizer works, 3 gut scrapers, 3 hide and skin works, 2 lard refiners, 2 paint and resin works, 1 palm oil works, 14 soap boilers, 5 tanneries, 1 tar and naphtha works, and 8 tripe boilers.

When permission is granted to carry on an offensive trade, conditions are imposed requiring that the premises be put in order to the satisfaction of the City Engineer, Building Surveyor and Medical Officer of Health, that no public or private nuisances be caused, and that the business be discontinued whenever the Council shall so require.

The number of inspections of premises where offensive trades are carried on was 1,094.

INSPECTION OF STABLES AND REMOVAL OF MANURE.

Stables within the city are systematically visited by two inspectors, a great portion of whose time is devoted to the work, constant attention being paid to the frequent removal of the manure and to general sanitation.

* The number of cellars occupied as separate dwellings at 31st December, 1912, was 1,614.

Leaflets are served on the occupiers of stables intimating the grave danger to public health which may arise from flies, and the necessity to adopt all possible precautions and attack their breeding places. The co-operation of the occupiers of all stables is asked, in order that the means adopted by the Health Committee for the extermination of flies may be successful, and as a result, in a large number of cases, middensteads have been dispensed with, the manure being removed daily by the City Engineer's Department.

The Medical Officer of Health has communicated with all the occupiers of stables with a view to securing their co-operation in connection with the removal of manure.

The total number of visits to stables during the year was 10,400. The number found uncovered was 115.

Middensteads in connection with stables are systematically sprayed with lime to check the breeding of flies, and the number of occasions when spraying took place during the year was 14,902.

During the year all the premises formerly occupied as stables have been re-visited, and the following figures indicate the position at the end of the years 1921 and 1931 :—

	1921.	1931.
Number of stables existing and in use ...	2,078	1,398
„ „ unoccupied and disused ...	1,478	1,482
„ horses	9,940	6,980
„ middensteads	1,302	1,228

It will be observed from the figures that there is a marked decrease in the number of stables, horses and middensteads, but as 1,482 stable premises have not been entirely abolished, and might be again used, they are also kept under systematic visitation.

RATS AND MICE (DESTRUCTION) ACT, 1919.

Active measures have been taken within the city throughout the year to ensure the destruction of as many rats as possible, and also to bring to the notice of the public the necessity of reducing the rat population to the lowest possible dimensions. There are special reasons for a constant campaign against rats in Liverpool. The first is the possibility

of the spread of plague, a disease which may be brought into the port on ships arriving from foreign countries. The destruction and damage to property, foodstuffs, etc., by means of rats further justifies the stringent measures which are constantly being taken against these vermin. In this connection the co-operation of warehouse owners and occupiers of rat-infested premises is always sought and obtained.

Ten rat-catchers are constantly engaged in the extermination of rats, four being engaged in that connection in warehouses, which are visited every three months, in accordance with arrangements made with the Ministry of Health. For the purpose of systematic inspection the city has been divided into six districts, and six rat-catchers systematically visit cafés, fried fish shops, grocery shops, foodstores, bread shops, and other places where rats are likely to be found. When a rat-catcher visits rat-infested premises, he operates for a few days, and indicates to the occupier methods whereby he can help in the extermination of rats. In the event of the occupiers failing to take action a notice is served under the Rats and Mice (Destruction) Act, 1919.

The assistance given by the rat-catchers is appreciated by occupiers and owners of premises, who are always willing and anxious to forward the extermination of rats.

To save the time of the rat-catchers and to provide for the destruction of the rats as quickly as possible, each rat-catcher is met at a certain place every morning, the rats being collected and labelled and a proportion taken the same day for examination by the City Bacteriologist.

The City Engineer's Department has also done valuable work in catching rats in public sewers, the rats being collected and dealt with in the same way.

Copies of the memorandum prepared by the Medical Officer of Health as to the destruction of rats have been widely circulated, and postcards

are left with warehouse keepers so that information may be at once obtained in the event of any unusual mortality amongst rats.

An office record is kept indicating the number of complaints received and a register of all premises visited, whilst the rat-catcher enters in his daily report book full details of each day's work.

It has not been found necessary to take any proceedings for non-compliance with the provisions of the Rats and Mice (Destruction) Act, 1919.

To ascertain from time to time the condition of the city in regard to rat infestation a weekly return is obtained from all the officers employed by the health department, who in the ordinary course of their daily duties visit different types of premises, and at the same time make inquiries in regard to the presence of rats. In the event of an intimation of the presence of rats a visit is at once paid by the rat-catcher to the premises.

NUMBER AND SPECIES OF RATS EXAMINED OR DESTROYED IN THE CITY AND PORT OF LIVERPOOL,
DURING THE YEAR 1931.

1931.	Examined (City).				Destroyed (City).				Examined (Port).				Destroyed (Port).				Total Caught.	
	Black.		Brown.		Black.		Brown.		Black.		Brown.		Black.		Brown.		City and Port.	Black and Brown.
January ...	22	181	54	833	154	11	93	1	1,349									
February ...	24	204	90	867	200	22	103	1	1,511									
March ...	36	234	95	933	224	86	127	5	1,745									
April ...	19	221	148	874	155	41	76	6	1,540									
May ...	32	256	133	1,121	237	28	117	3	1,927									
June ...	46	280	170	1,082	237	52	103	6	1,976									
July ...	27	254	129	916	210	34	130	17	1,717									
August ...	13	221	63	756	243	25	164	1	1,486									
September ...	21	290	109	1,023	322	42	61	36	1,904									
October ...	48	301	156	990	347	30	135	14	2,021									
November ...	14	261	75	1,295	338	24	169	1	2,177									
December ...	7	165	49	612	201	17	206	10	1,267									
TOTAL	309	2,868	1,271	11,307	2,868	412	1,484	101	20,620									

NUMBER AND SPECIES OF RATS CAUGHT, IN THE CITY AND PORT OF LIVERPOOL,
DURING THE YEAR 1931.

1931.	Warehouses.		Sewers.		Other Places.		Total.		Ships.		Quays.		Other Sources.		Total.	
	Black.	Brown.	Black.	Brown.	Black.	Brown.	Black.	Brown.	Black.	Brown.	Black.	Brown.	Black.	Brown.	Black.	Brown.
January ...	54	113	—	434	22	467	76	1,014	174	—	55	7	18	5	247	12
February ...	71	151	—	445	43	475	114	1,071	205	—	83	18	15	5	303	23
March ...	92	114	—	458	39	600	131	1,172	251	3	58	63	42	25	351	91
April ...	109	166	—	448	58	481	167	1,095	162	—	44	28	25	19	231	47
May ...	140	158	—	519	25	928	165	1,377	289	—	31	24	36	7	354	31
June ...	155	197	—	536	61	629	216	1,362	215	—	94	22	31	36	340	58
July ...	98	158	—	600	58	412	156	1,170	237	—	67	25	36	26	340	51
August ...	56	84	—	506	20	387	76	977	251	1	111	8	45	17	407	26
September ...	96	192	—	557	34	564	130	1,313	190	—	166	58	27	20	383	78
October ...	156	133	—	594	48	564	204	1,291	327	—	94	6	61	38	482	44
November ...	45	514	—	456	44	586	89	1,556	360	—	115	19	32	6	507	25
December ...	43	137	—	383	13	257	56	777	286	—	95	11	26	16	407	27
TOTAL ...	1,115	2,117	—	6,008	465	6,050	1,580	14,175	2,947	4	1,013	289	392	220	4,352	513

SPECIAL VISITS.

Number of visits to railway carriages	...	...	...	318
„ „ „ platforms (fish arrivals)	...	...	...	82
„ „ „ poultry depots	...	...	...	412
„ „ „ manure depots	...	...	...	96
„ „ „ marine stores	...	...	...	791
„ „ „ fried fish shops	...	...	...	2,850

Complaints are occasionally received from passengers directing attention to the dirty condition of railway carriages. These carriages are from time to time inspected, and if they are found in an unclean condition the railway company concerned is informed and the matter receives prompt attention.

The manure depots are situated in close proximity to the north corporation destructor, and visits are made to them to see that the manure which has been received from the stables in the centre of the city is frequently removed so as to avoid the possibility of breeding places for flies.

FRIED FISH SHOPS.

There are 750 fried fish shops within the City, and all of them are visited systematically to see that the requirements of the Byelaws are carried out.

PICTUREDROMES.

At the request of the Licensing Justices, officers of the Health Committee systematically visit all picturedromes to see that the means provided for the ventilation of the auditorium is in use, attention also being directed to the condition of the sanitary conveniences, provision of seats for the attendants, the general cleanliness of the premises, and the water supply. A Female Inspector also makes systematic visits to inspect the sanitary conveniences used by females.

During the year 572 night visits were paid, and on each occasion the premises were found to be in a satisfactory condition. A day inspection is also made so that closer attention may be given to the examination of the sanitary conveniences.

RAG FLOCK ACTS, 1911 AND 1928.

There are two factories in which rag flock is manufactured in this district. Six visits have been made and four samples of rag flock have been taken, which were in accordance with the standard of cleanliness required by the rag flock regulations. Twenty-six visits have been made to premises where rag flock was used and five samples were taken, which were in accordance with the regulations.

SHAVING BRUSHES.

As a precautionary measure in connection with the possible spread of anthrax from shaving brushes, samples of these brushes are purchased from shops in different parts of the city, all of which are submitted to the City Bacteriologist for examination.

Number of shaving brushes submitted during the year	...	41
„ found infected with anthrax	.....	Nil.

FACTORY AND WORKSHOP ACT, 1901.

FACTORIES, WORKSHOPS, AND WORKPLACES.

All factories, workshops and workplaces are systematically visited by four inspectors appointed under the Act, the various premises being grouped in districts so as to secure the maximum number of visits in the minimum time.

Total number of factories	...	...	...	...	...	1,389
„ workshops	...	...	...	...	...	2,360
„ workplaces	...	...	...	...	...	376
„ visits to factories (including factory bakehouses)	...	...	...	...	...	5,576
„ visits to workshops (excluding work- shop bakehouses)	...	...	...	...	...	7,320

BAKEHOUSES.

There has been a gradual but marked decline in the use of underground bakehouses. Since the passing of the Factory and Workshops Act, 1901, 337 underground bakehouses have been closed.

Many causes have led to the closing of underground bakehouses, but the main cause has been due to the retirement of the small master baker, the merging of smaller businesses into larger firms, business competition of larger firms, and the centralisation of baking in well equipped up-to-date factories, provided with modern baking appliances. In a few instances, bakehouses have been closed owing to the premises having been acquired and used for other purposes.

During the year 2,843 visits were paid to bakehouses.

Number of bakehouses on register, 31st December ...				537
,, special visits to bakehouses on complaints ...				52
,, ordinary visits to bakehouses ...				2,689
,, re-inspections of incorrect premises ...				102
Total visits ...				2,843
Number of occasions on which bakehouses were found				
incorrect ...				76
,, sanitary defects found ...				84
,, notices issued ...				84

The above notices were complied with by the owners or occupiers.

HOMEWORK.

In accordance with the provisions of the Act, outworkers returns are received twice yearly, and the premises referred to in the returns are visited by the district sanitary staff (a) to ascertain that the sanitary condition of the premises is satisfactory, and (b) to ascertain if the premises are used as "workshop" or "domestic workshop." The following statement shows the work undertaken during the year, viz. :—

Number of outworkers' returns received ...				180
,, visits to premises ...				84
,, premises incorrect ...				Nil.

Outworkers' premises are also systematically visited by a female Inspector to ascertain that the sanitary conditions are satisfactory.

Administration of the Factory and Workshop Act, 1901, in
connection with
FACTORIES, WORKSHOPS, WORKPLACES & HOMEWORK

The following Tables are prepared by request of the Secretary of State :—

1.—Inspection of Factories Workshops and Workplaces.
Including Inspections made by Sanitary Inspectors or Inspectors of Nuisances.

Premises.	Number of		
	Inspections.	Written Notices	Occupiers Prosecuted.
<i>Factories</i> (Including Factory Laundries.)	5,576	258	—
<i>Workshops</i> (Including Workshop Laundries).	10,163	453	—
<i>Workplaces</i> (Other than Outworkers' premises)	2,208	5	—
TOTAL	17,947	716	—

2.—Defects Found in Factories, Workshops and Workplaces.

Particulars.	Number of Defects.			Number of offences in respect to which Prosecutions were instituted.
	Found.	Remedied.	Referred to H.M. Inspector.	
<i>Nuisances under the Public Health Acts :*</i>				
Want of cleanliness	286	286	—	—
Want of ventilation	3	3	—	—
Overcrowding	—	—	—	—
Want of drainage of floors	—	—	—	—
Other nuisances	346	346	—	—
Sanitary accommodation—				
Insufficient	19	19	—	—
Unsuitable or defective	208	208	—	—
Not separate for sexes	11	11	—	—
<i>Offences under the Factory and Workshop Acts :—</i>				
Illegal occupation of underground bakehouse (s. 101)... ..	—	—	—	—
Other offences	1	1	—	—
(Excluding offences relating to outwork and offences under the sections mentioned in the Schedule to the Ministry of Health (Factories and Workshops Transfer of Powers) Order, 1921)				
TOTAL	874	874	—	—

*Including those specified in sections 2, 3, 7 and 8 of the Factory and Workshop Act, 1901, as remediable under the Public Health Acts.

There were no cases of outwork in unwholesome premises (sec. 108) during the year.

RESTAURANT KITCHENS.

All kitchens in connection with cafés and restaurants are systematically visited, particular attention being paid to the cleanliness of the premises and of the workers employed in the kitchen.

Total number of visits during the year	...	...	...	2,208
Number found incorrect	...	...	...	84

SHOPS ACTS, 1912-1930.

In accordance with the provisions of the Shops Acts, a register of all shops within the city is kept up to date by systematic visitation. The Health Committee has made 15 half-holiday orders, and nine closing orders under the Act, and day and night visits are made to see that the provisions of these orders are carried out.

With regard to the half-holiday orders, the majority of the shops are closed at 1.0 p.m. on Wednesday.

On Order has been made by the City Council suspending the closing hour on the Thursday preceding Good Friday each year, for the retail sale of fish, game and vegetables, also the retail business of bread and flour dealers.

The shops inspectors, in addition to their duties under the above Acts are also concerned in the provision of sanitary conveniences in shops and the carrying out of that portion of the Public Health (Meat) Regulations which have reference to the sanitary condition of premises in which meat is sold or exposed for sale. They are also responsible for seeing that the shops are provided with suitable receptacles for trade refuse.

The officers of the Health Committee have received valuable assistance from the city police in carrying out the provisions of the Shops Acts and Orders made thereunder.

A female inspector, in addition to her duties under the Shops Acts, has also carried out the provisions of the order made by the Ministry of Health (Circular 235) with reference to "prohibition of the employment of women after childbirth," and in this connection 708 visits have been made to factories and workshops within the city. In each case, the female overseer was interviewed and the requirements of the order

explained and, as a result of the visit and explanation, it may be anticipated that every precaution will be taken to see that the provisions of the order are carried out.

During the year complaints were received mainly in regard to the contravention of the Half-Holiday Order, with the following results:—

Number of complaints ...	...	...	...	...	...	231
„ visits after 1 p.m. ...	...	...	...	...	...	87,529
„ „ „ 7 p.m. ...	...	...	...	...	...	57,046
„ „ „ 8 p.m. ...	...	...	...	...	...	90,358
„ „ „ 9 p.m. ...	...	...	...	...	...	6,837
„ „ „ 9 30 p.m. ...	...	...	...	...	...	8,357
„ „ „ 10 p.m. ...	...	...	...	...	...	216
Total number of visits ...						250,343
„ informations ...	...	...	...	...	...	171
Number fined ...	...	...	...	...	...	88
„ withdrawn ...	...	...	...	...	...	8
„ discharged cautioned ...	...	...	...	...	...	75
Amount of fines and costs ...	...	...	...	...	...	£39 19 6

In addition to the above, it was found necessary to caution persons by letter for minor infringements of the Acts.

LIVERPOOL CORPORATION ACT, 1927.

EMPLOYMENT AGENCIES.

The question of Employment Agencies has been dealt with by the Sanitary Department since November, 1927, prior to this date the work being carried out by the Town Clerk's Department.

On the 16th March, 1932, the City Council confirmed Byelaws made by the Health Committee for the control of employment agencies, and they are now being put into operation.

It is not necessary under the Act for a person to notify the Local Authority prior to the commencement of the business of an Employment Agency, the responsibility being placed upon the Local Authority to find the premises where such business is carried on.

The method adopted is for the Sanitary Inspectors to make a return of all premises where there is any indication of an Employment Agency being conducted, and to inform the occupier that a licence is necessary.

An office record is also kept of all Employment Agencies, giving particulars of the premises, occupiers, and nature of business. The register indicates that at the present time there are 44 Employment licensed Agencies in the city.

COMMON LODGING HOUSES.

At the end of the year 1930 there were on the register (including emigration houses), 119 lodging houses. During the year 1931, 16 houses were given up and removed from the register, and 7 new houses added, leaving, at the end of 1931, 110, providing accommodation for 5,558 lodgers.

Under Part 5 of the Public Health Acts Amendment Act, 1907, Sections 69 to 72 (adopted in 1912), 77 keepers were re-registered and 23 deputy-keepers registered.

New Byelaws with respect to "Common Lodging Houses" were allowed by the Ministry of Health on the 2nd September, 1931, which repealed the Regulations respecting "Common Lodging Houses" made by the Council of the Borough of Liverpool on August 14th, 1869.

The new "Byelaws" give additional powers for the well ordering of such houses.

INSPECTION OF LODGING HOUSES.

Visits by day	...	...	...	...	...	5,314
„ night	...	...	...	...	...	91
„ to houses not on the register	...	...	...	...	...	181

No informations were laid against keepers during the year.

INFECTIOUS DISEASES IN LODGING HOUSES.

Six cases of infectious disease were notified during the year, the necessary disinfection and cleansing of the premises being carried out after each case.

Sixty-nine persons living in common lodging houses were notified as suffering from phthisis. In all cases where patients on discharge from

at a sanatorium return to these houses, instructions are given regarding the isolation of the patient, and the precautions to be taken to prevent the spread of infection.

WOMEN'S LODGING HOUSES.

There are 13 houses providing accommodation for 494 women lodgers. For details of women's lodging houses see reports for the years 1909 and 1914.

INSPECTION OF HOUSES LET IN LODGINGS.

Houses on register, December 31st, 1930	...	...	15,859
„ removed from register during 1931	...	...	106
„ added to register during 1931	...	...	89
„ on register, December 31st, 1931	...	...	15,842

DAY VISITS :—

Day visits	...	...	...	...	...	129,452
Rooms measured	...	...	...	...	...	559

OVERCROWDING :—

Infringements found	...	...	...	...	...	1,084
Re-inspections	...	...	...	...	...	5,042
Infringements abated	...	...	...	...	...	746

NON-SEPARATION OF SEXES :—

Infringements found	...	...	...	...	...	96
Re-inspections	...	...	...	...	...	334
Infringements abated	...	...	...	...	...	79

FLOORS, STAIRS, ETC., FOUND DIRTY :—

Floors found dirty	...	...	...	...	...	387
„ „ cleansed on re-visit	...	...	...	...	...	387
Stairs and passages dirty	...	...	...	...	...	224
„ „ „ found cleansed on re-visit	...	...	...	...	...	224

No informations were laid during the year.

CLEANSING OF WALLS AND CEILINGS.

The following notices were served on landlords of houses let in lodgings during the year under Section 7 of the 1911 byelaws :—

Preliminary notices to cleanse walls and ceilings	...	7
Statutory	" " " "	0
Houses cleansed	... ..	5
Rooms	" " " " " "	23

REFERENCES FROM OTHER DEPARTMENTS.

Received from Sanitary Inspectors	... ..	174
" by anonymous complaints	... ..	53
" by tenants'	" " " "	30
" lodgers'	" " " "	22
" by other sources	... ..	26

REFERENCES TO OTHER DEPARTMENTS.

Referred to Sanitary Inspectors	... ..	9,114
" " (Special cases)	... ..	580
" City Engineer	... ..	75
" Water "	... ..	1,904
" City Surveyor	... ..	1,101
" Health Visitors and other departments	... ..	11

**CANAL BOATS ACTS, 1877 and 1884, and
CANAL BOATS ORDERS, 1878. 1922 and 1925.**

The Leeds and Liverpool Canal Company are the proprietors of the only canal having direct communication with Liverpool, and the length of the waterway within the city, exclusive of the locks which lead to the docks, is about three miles.

The number of inspections of canal boats during the year was 2,885, and the condition of the boats and their occupants as regards matters dealt with in the acts and regulations is indicated in the following table :—

Boats on register 1st January, 1931	... ..	385
New boats registered	... ..	13
Boats removed from register	... ..	5
Boats on register, 31st December, 1931	... ..	393

One copy of a registration certificate was issued owing to the original certificate being worn out.

Contraventions occurred on 44 boats, of which number 12 were registered by other authorities.

NATURE OF CONTRAVENTIONS :—

Unregistered boats used as dwellings	10
No certificate on board or certificate not legible ...	6
Leaky decks	10
Defective stoves or stove-pipes	4
Cabins requiring re-painting	1
Incorrect marking of boats	20
Defective cabin fittings	1
Verminous cabin	1
Indecent occupation of cabin	1
Carrying offensive cargo, without a second bulk-head ...	1
	55

Written notices were issued to owners in 35 instances.

Verbal notices were given to owners in 10 instances.

All these notices have been complied with. No informations were laid during the year against owners or masters for infringement of the acts or regulations. No case of infectious sickness was reported as having occurred during the year on any canal boat visiting the district. Eighteen motor-propelled boats and fifty-nine steam-propelled boats are registered by this Authority.

On May 1st, 1923, the Ministry of Health, under section 10 of the Canal Boats Act, 1884, issued an order cited as the Canal Boats Order, 1922. This order brings within the scope of the Canal Boats Acts all similar vessels which had hitherto been registered under the Merchant Shipping Acts, and consequently were exempt from inspection.

The inspectors of the Port Sanitary Authority made 659 inspections during the year and 24 contraventions were discovered, which were subsequently dealt with. These figures are included in the foregoing table.

DETAILS OF VISITS TO BOATS PLYING ON THE CANAL.

313 boats were visited, which were registered as follows:—208 at Liverpool, 51 Runcorn, 4 Leigh, 1 Wigan, 23 Manchester, 20 Chester, 3 Leeds, 1 Burnley, 2 Northwich.

All were "wide" boats, 10 being propelled by steam, 178 steam-towed, 17 motor-driven, and the remainder horse-drawn.

The number of inspections of these 313 boats was 2,226, and the population comprised:—men, 581; women, 54; children, 9; a total of 644 persons, the sexes and ages being as follows:—

Males over 14 years of age	...	...	...	...	581
„ „ 5 and under 14	...	...	...	...	1
„ under 5 years of age	...	...	...	...	4
Females over 12 years of age	...	...	...	...	54
„ „ 5 and under 12	...	...	...	...	2
„ under 5 years of age	...	...	...	...	2
					644

NOTE.—Males on attaining the age of 14 years, and females 12 years, living on canal boats, become adults, and are recorded as such in the above table.

(Under Reg. III, etc., Sec. 2, Canal Boats Act, 1877.)

Three children of school age were found on canal boats during the year, who were on trips with their parents during the school holidays.

Two families were found on boats on the canal who had not a home ashore in addition to that on board. Neither of these boats were registered at Liverpool.

AMBULANCE AND DISINFECTING STAFF.

There were 7,505 cases of infectious diseases removed to hospital by officers of the ambulance staff during the year.

The number of rooms disinfected was 49,956, and 4,788 library books were also disinfected.

The number of articles (bedding, clothing, etc.) disinfected at the disinfecting apparatus was 60,690, in addition to 26,850 other articles.

Two disinfecting stations have been established in the city for a number of years, each well equipped to deal with large quantities of material. The north end of the city is served by the Charters Street station and the south end by the Smithdown Road station. When necessary the disinfecting apparatus attached to each of the city hospitals may be utilised.

DISINFECTION OF TRANSMIGRANTS.

Typhus fever, which is a vermin-transmitted disease, has caused the Ministry of Health and also the American Health Authorities to view the arrival of emigrants and transmigrants from Central Europe en route to America with some anxiety.

The emigration houses where these people reside, pending the sailing of the vessel, are kept under strict supervision by the lodging-house inspectors, being visited daily, and all cases of infectious illness are promptly reported to the shipping company's doctor and the local health authority. The bedding is also frequently examined and attention is given to the occupation of the rooms to prevent overcrowding and to ensure cleanliness.

MORTUARIES.

The Mortuary at the Prince's Dock is for the reception of the bodies of persons who have been drowned, killed or found dead, and upon which the coroner desires to hold inquests. Bodies are taken to this mortuary by the police, and when it is necessary to make post-mortem examinations. During the year the number of bodies removed to Prince's Dock Mortuary was :—From the river 5, and from the city, 217.

The method of transport of the bodies of persons killed, or found dead in the street, has been adequately provided for, the Health Committee having arranged, through the Chief Constable, with a firm of undertakers to supply a hearse on short notice, together with a shell coffin. This arrangement has proved satisfactory.

The district mortuaries are seldom used. For the convenience of juries, as well as for other reasons, it is preferable that bodies should be conveyed to the central mortuaries. The Ford Street mortuary is provided for the reception of bodies which cannot be kept at the homes in which death has taken place, without possible injury to the health of the inmates, and is also used for the reception of stillbirths. The number of bodies received during the year was 291.

CREMATORIUM.

The Crematorium, which is situated in Anfield Cemetery, was opened by the Liverpool Crematorium Company in the year 1896. When the Corporation became the Burial Authority for the city, the administration was taken over in October, 1908, by the Crematorium Sub-Committee.

Cremation is not a modern innovation; it has been used as a method of disposal of the dead since very early times.

While preserving the sanctity at present associated with earth burial, cremation fulfils nature's laws more quickly by reducing the body to its natural state in the space of a few hours, whereas in earth burial the process takes many years to accomplish.

The ever-increasing demand for new burial grounds and the heavy expenditure which their provision and upkeep demands are problems which could best be solved by the establishment of a crematorium in every large centre of population, and by the general adoption of cremation.

That cremation is steadily becoming more popular is shown by the fact that in 1885 there was one crematorium, whereas now there are 22 crematoria in this country; the total number of cremations during 1931 being 5,195.

As regards cost, cremation compares favourably with ordinary burial, and if it were more generally adopted, the cost could be much reduced.

It may be regarded as an adequate safeguard against the remote possibility of a person being buried alive.

The Crematorium is attached to a Chapel, beneath which is a spacious columbarium, or chamber, fitted with small niches, used as the resting places for urns holding the ashes of the dead. The niches are closed with marble slabs bearing suitable inscriptions. In the Crematorium grounds is situated the Garden of Remembrance, which was opened on July 28th, 1927. This plot is specially reserved for the depositing of ashes, where this method of disposal is desired by the relatives. Disposal of ashes in this way involves no extra charge.

The number of cremations which have taken place at the Liverpool Crematorium since the opening is shown in the following table :—

1896.....	2	1915.....	53
1897.....	10	1916.....	58
1898.....	27	1917.....	62
1899.....	23	1918.....	70
1900.....	40	1919.....	88
1901.....	40	1920.....	70
1902.....	54	1921.....	74
1903.....	35	1922.....	74
1904.....	40	1923.....	62
1905.....	35	1924.....	74
1906.....	46	1925.....	75
1907.....	34	1926.....	96
1908.....	32	1927.....	101
1909.....	46	1928.....	103
1910.....	37	1929.....	103
1911.....	50	1930.....	160
1912.....	52	1931.....	163
1913.....	66		
1914.....	49		2,204

SMOKE NUISANCES.

Proceedings for the abatement of nuisances caused by the emission of excessive smoke from factories, steamers, etc., were taken under the following Act :—The Liverpool Corporation Act, 1921, Sections 472 and 473.

REPORTS RE EXCESSIVE SMOKE.

Number of reports on factories	...	...	...	...	28
„ „ „ „ steamers in dock	...	...	...	...	11
„ „ „ „ steamers in river	...	...	...	...	149
					188

Seventy-seven steamship owners were communicated with, or written to, in respect of nuisances caused by the emission of excessive smoke, and 1,527 manufacturers and 135 steamship owners cautioned.

INFORMATIONS FOR EXCESSIVE SMOKE.

Informations against occupiers of factories	...	...	...	28
„ „ owners of steamers in river	...	...	...	82
„ „ „ „ „ in dock	...	...	...	2
Total	...	...	...	112

				Acquitted or withdrawn.	Fined.	Amount of Fines.
Factories	...	...	...	1	27	£13 4 0
Steamers	...	...	...	1	83	£52 4 0
				2	110	£65 8 0

SMOKE INSPECTION.

The total number of complaints received of nuisances caused by smoke from defective state of flues, low chimneys, etc., was 68, and the visits relating to same numbered 804.

Chimneys raised in consequence of complaints received	...	17
Flues altered or repaired	...	23
Complaints under observation	...	23
Complaints referred to other departments	...	2
Complaints not sustained	...	3
Total	...	68

SMOKE ABATEMENT.

INDUSTRIAL SMOKE.—Continuous observations are kept on all the principal chimneys in the city with regard to the emission of excessive smoke; atmospheric conditions show that there has been a marked improvement as regards the pollution of the atmosphere by industrial smoke. This improvement is being maintained.

Practically all smoke nuisances can be attributed to the following two causes, viz. :—

- (a) Careless stoking of the furnaces.
- (b) Forcing the furnaces beyond their working capacity.

The smaller factories continue to use the old method of hand stoking, and as these are much the greater in number, particular observations have to be taken and visits made, in order that the necessary care in the stoking and tending of the furnaces shall be maintained.

Most of the large factories have been fitted with new modern steam generators, which are mechanically supplied with fuel and air, and under normal conditions, smoke is reduced to a minimum. All boilers have a maximum output, and when the load is increased beyond that output, forcing of furnaces has to be resorted to, and nuisance is caused. In a number of cases this has been pointed out to the management, and where no attention has been paid, prosecution has taken place.

The remedy for this forcing is either to increase the boiler plant, or to reduce the load by substituting electrical power from the Corporation supplies. In many factories the load has been reduced in this manner with satisfactory results.

During the year the Clarence Dock Power Station commenced its electrical output. The boilers of this station are mechanically supplied with fuel and air, and have been fitted with a highly-efficient grit and sulphur eliminating plant. This installation in operation gives a high degree of efficiency, and the ideal smoke, grit and sulphur free chimney exhaust is attained.

In many factories small vertical type boilers are in use to a considerable extent, and when coal is used as fuel a certain amount of nuisance is caused. This type of boiler is constructed for the use of coke as fuel, and when coke is used, there is no further cause for complaint. Vertical boilers are poor generators from an efficiency point of view, and if manufacturers have sufficient space, Cornish, Lancashire or tubular boilers are recommended.

PULVERISED FUEL.—There are two power stations and one private firm in the city working with this type of fuel.

Although still a new process, pulverised fuel gives highly efficient results when used in conjunction with furnaces designed for its combustion. Further adoption of this system would greatly assist in overcoming atmospheric pollution, and give a greater demand for the cheaper coals in competition with oil fuel.

OIL FUEL.—This year several large buildings have been fitted with boilers and heating apparatus burning crude oil as fuel. This fuel gives every satisfaction and requires very little attention whilst burning; combustion can be automatically controlled by thermostat fuel regulators. Although the cost of running plants with oil fuel is greater than that with coal, considerable benefit is derived by the cleanliness of the plant, and the convenience with which the fuel can be stored.

LOW CHIMNEYS.—During the year 17 chimneys were raised in consequence of complaints received. It is often found that products of combustion, other than smoke, emitted from a chimney, cause a nuisance to the surrounding inhabitants. A change of fuel will sometimes remedy this, but where this is not practicable, notices are sent to the occupier to raise the chimney; although this does not alter the emission of the flue gases, it carries them into the atmosphere above adjacent premises.

STEAMERS IN DOCK AND ON THE RIVER.—Nuisance caused by excessive smoke emitted from steamers has shown a marked improvement. Special attention has been given to this class of nuisance as the prevailing westerly winds carry the smoke from steamers over the city. It is an encouraging factor that from the observations taken, sustained excessive smoke from steamers plying on the river has become considerably reduced.

During the year there were 160 reports of excessive smoke from steamers in dock and on the river, 77 of which related to foreign-going vessels. No proceedings were taken with regard to this class of vessel, but the owners were communicated with in respect of the nuisance. The number of summonses issued in regard to other vessels was 84, there being 83 convictions and one being withdrawn.

DOMESTIC SMOKE.—There is no legislation to deal with this nuisance. Individually the amount of smoke emitted is small. Collectively it is heavy, almost as heavy as that of industrial chimneys, the deposit being a greasy soot which adheres to and disfigures buildings and premises, and causes clothing and hangings to become filthy. The use of gas and electricity for heating and cooking are recommended, also the use of smokeless fuels. There are three substances sold locally under the designation of smokeless fuels, viz. :—Coalite, Dryco and Ricoal.

The approximate demand for domestic fuel in Liverpool during the winter months is 19,000 tons weekly. The demand for smokeless fuel is rapidly increasing and amounts to approximately 2,000 tons per week. Although this is an encouraging factor the percentage of the whole is still small, and until the demand is considerably increased or a greater number of houses are converted for gas or electric heating, progress in this direction can only be slow.

THE FIRING OF DOMESTIC CHIMNEY FLUES.—From observation it has been found that the wilful or inadvertent firing of chimney flues tends considerably towards the pollution of the atmosphere. This year the number of convictions for this form of offence was 2,443, as against 2,520 the previous year, which shows a decrease of 77 convictions. It is deplorable to think that certain of our population wilfully fire their chimney flues or allow them to become so dirty that they inadvertently fire and clear themselves, to the detriment of the whole of the surrounding neighbourhood. The Medical Officer of Health wishes to make a special appeal to all householders to assist him in the general cleanliness of the city and purity of the atmosphere, by having their house flues swept and cleaned at least twice per year, where coal is used as fuel in the fireplaces. Prosecutions for this class of offence are carried out by the police, who are doing very estimable work, by assisting in the prevention of atmospheric pollution.

ATMOSPHERIC POLLUTION.

The accompanying tables show the results of the analyses in the two atmospheric pollution gauges in Liverpool. The first, which has been in operation for eleven years, is placed in the grounds of the North Tuberculosis Dispensary, Netherfield Road. The second, which is in the grounds of the Carnegie Welfare Centre, Mount Pleasant, came into operation in March, 1929; it is situated in a much less crowded area.

As was anticipated the figures of deposits from the new gauge are much lower than those from the old one. The main figures are:—

	Netherfield Road Gauge.	Carnegie Welfare Centre Gauge.
Total Solids	557·83	329·60
Undissolved matter—		
tarry matter, etc.	6·94	5·24
Other organic matter	90·29	61·30
Mineral matter	193·16	123·71
Total undissolved matter	290·39	190·25
Total dissolved matter	267·44	139·35
Chlorine as Cl.	36·33	29·31
Sulphate as SO ₃	75·46	33·10
Rainfall in inches	35·90	37·12

It will be observed that the sum total deposit in the case of Netherfield Road is greater by 36½ tons than it was during 1930, but is less by 20 tons than in 1929. On the other hand, it is of interest to note that the total deposit at the Carnegie Infant Welfare Centre (a residential district) appears to have increased. During 1931 it was 26½ tons greater than in 1930. The probable cause of this increase was the cold and wet summer months of 1931.

A further point of interest is that the rainwater was distinctly acid during 11 out of the 12 months, the only month in which the acidity could reasonably be attributed to dissolved carbon dioxide being July.

The total acidity, calculated as sulphuric acid, is 3 tons per square mile greater than in 1930 for Netherfield Road, and practically 6 tons greater in the case of Carnegie Infant Welfare Centre.

ATMOSPHERIC POLLUTION, 1931.

(332, Netherfield Road)

RESULTS OF ANALYSES BY THE CITY ANALYST (CALCULATED IN TONS PER SQUARE MILE).

	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Totals for 12 months.
Sum Total Solids	63.67	40.00	35.73	55.95	44.75	35.83	46.51	46.00	33.66	43.63	58.80	53.30	557.83
UNDISSOLVED MATTER—													
Tarry Matter and Bitumen	1.09	0.59	0.41	0.61	0.46	0.36	0.31	0.56	0.15	0.59	0.89	0.92	6.94
Other Organic Matter	9.09	5.89	6.81	9.00	7.93	6.66	9.38	8.01	5.51	7.09	6.17	8.75	90.29
Mineral Matter	14.53	11.98	19.84	23.11	18.13	14.02	21.65	16.68	12.19	16.11	9.54	15.38	193.16
Total Undissolved Matter ...	24.71	18.46	27.06	32.72	26.52	21.04	31.34	25.25	17.85	23.79	16.60	25.05	290.39
DISSOLVED MATTER—													
Organic Matter by Ignition	16.70	7.91	3.67	8.72	7.70	5.92	5.38	8.46	7.04	9.79	20.45	15.40	117.14
Mineral Matter	22.26	13.63	5.00	14.51	10.53	8.87	9.79	12.29	8.77	10.05	21.75	12.85	150.30
Total Dissolved Matter	38.96	21.54	8.67	23.23	18.23	14.79	15.17	20.75	15.81	19.84	42.20	28.25	267.44
Acidity as H ₂ SO ₄	1.68	0.88	0.05	0.71	0.61	0.48	—	0.94	0.92	0.38	2.73	1.40	10.78
Chlorine as Cl	7.06	4.67	1.33	3.09	1.76	1.48	1.84	2.50	1.76	2.40	3.85	4.59	36.33
Ammonia as NH ₃	0.61	0.26	0.19	0.23	0.33	0.28	0.05	0.51	0.20	0.17	0.43	0.36	3.62
Sulphate as SO ₃	9.89	5.48	2.52	7.47	6.02	4.87	4.23	6.45	4.74	5.56	12.06	6.17	75.46
Lime as CaO	2.78	1.25	1.15	1.96	1.58	1.73	1.22	1.53	1.10	1.38	1.61	1.71	19.00
RAINFALL {	90.98	70.50	12.25	71.18	68.78	96.72	47.98	150.70	86.13	49.25	125.43	41.98	911.88
{ Millimetres ...													
{ Inches	3.58	2.78	0.48	2.80	2.71	3.81	1.89	5.93	3.39	1.94	4.94	1.65	35.90
PH. Value	3.8	3.8	5.3	4.4	4.2	4.4	5.8	4.4	4.4	4.4	3.7	3.7	—

ATMOSPHERIC POLLUTION, 1931. *(Carnegie Infant Welfare Centre, Cambridge Street)*

RESULTS OF ANALYSES BY THE CITY ANALYST (CALCULATED IN TONS PER SQUARE MILE).

	January	Feb.	March	April	May	June	July	August	Sept.	October	Nov.	Dec.	Total for 12 months
Sum Total Solids.....	33.89	26.59	18.69	25.68	23.77	24.35	28.66	27.29	28.10	25.23	31.62	30.73	329.60
UNDISSOLVED MATTER—													
Tarry Matter and Bitumen	0.54	0.48	0.31	0.56	0.23	0.36	0.48	0.54	0.46	0.59	0.18	0.51	5.24
Other Organic Matter	5.61	4.52	3.80	4.92	5.38	4.89	5.66	6.27	5.33	5.34	5.45	4.13	61.30
Mineral Matter	12.26	12.04	8.74	11.15	9.44	8.95	10.69	9.36	6.83	9.79	15.56	8.90	123.71
Total Undissolved Matter	18.41	17.04	12.85	16.63	15.05	14.20	16.83	16.17	12.62	15.72	21.19	13.54	190.25
DISSOLVED MATTER—													
Organic Matter by Ignition.....	8.19	4.09	2.63	3.62	4.38	5.07	6.91	5.99	7.24	5.00	4.64	8.80	66.56
Mineral Matter	12.29	5.46	3.21	5.43	4.34	5.08	4.92	5.13	8.24	4.51	5.79	8.39	72.79
Total Dissolved Matter	20.48	9.55	5.84	9.05	8.72	10.15	11.83	11.12	15.48	9.51	10.43	17.19	139.35
Acidity as H_2SO_4	1.25	0.76	0.06	1.38	1.15	1.71	—	2.09	1.91	0.66	1.71	0.94	13.62
Chlorine as Cl.	5.43	3.16	1.12	2.17	1.64	1.40	1.25	2.14	2.35	1.86	2.30	4.49	29.31
Ammonia as NH_3	0.20	0.05	0.08	0.03	0.13	0.13	0.05	0.18	0.05	0.03	0.15	0.20	1.28
Sulphate as SO_3	4.44	2.24	1.15	2.60	2.93	2.06	1.73	3.21	3.83	2.07	3.19	3.65	33.10
Lime as CaO	2.65	0.69	1.15	1.48	1.10	1.91	1.73	1.71	2.35	1.50	2.30	1.96	20.53
RAINFALL {	80.30	67.00	6.45	70.90	71.15	124.39	48.34	167.57	101.19	48.98	113.43	43.18	942.88
{ Millimetres													
{ Inches	3.16	2.64	0.25	2.79	2.80	4.90	1.90	6.60	3.98	1.93	4.47	1.70	37.12
P.H. Value	4.2	4.0	5.0	3.9	3.8	3.9	5.8	4.1	3.9	3.9	3.9	3.7	—

CLEANSING AND SCAVENGING.

The City Engineer has kindly supplied the following information, which indicates the operations carried out by the cleansing staff under his control :—

The work of the department consists of cleansing and watering the 668 miles of streets within the city, together with their back passages, the periodical emptying of ashbins, street gullies, street and court bins and ashpits, and the disposal of the refuse collected therefrom, etc. During 1931 the quantity of domestic and trade refuse collected and received was approximately 401,028 tons, and the quantity disposed of was approximately 441,952 tons, the latter figure including 23,670 tons of clinker residue and fluedust from destructors. The quantity dealt with per working day was 1,440 tons.

The whole of the 668 miles of streets with their passages, with the exception of a few on the outskirts of the city, are swept weekly, the principal streets, and streets in congested areas, receiving constant daily attention. In addition, certain streets and passages are washed by hose pipe. During 1931 street washing was carried out as follows :—

31 streets washed once a week ;

1 street washed twice a week ;

1 street washed daily ; and

160 streets washed as occasion required.

Five sweeping machines are employed regularly, three on night work (one of which collects as well as sweeps), covering approximately 100 brush miles of roadway nightly, and two on day work, brushing the roadway and picking up the sweepings in side streets.

On Sunday mornings a number of the principal streets and streets in congested areas are cleansed, and all street and court bins emptied.

During 1931 approximately 51,400 tons of street sweepings were collected and disposed of as manure and top dressing.

In connection with street watering upwards of two and a quarter million gallons of water were distributed during the season, in addition to the large quantity used for street washing.

Two mechanical gully emptiers are now in use, which perform the work in a very satisfactory and sanitary manner.

746,220 square yards of carriageway were treated with dust-laying compositions, of which 68,315 square yards were in various parks and cemeteries.

The frequent flushing of trough water closets is a sanitary measure, this type of closet being provided principally in the more densely populated areas of the city. The number of trough water closets in existence on 31st December, 1931, was 570.

There are 32 underground urinals with 305 stalls and 136 overground urinals with 572 stalls in Liverpool, which are cleansed and disinfected at least once daily. During the summer season a large number of urinals and trough water closets are cleansed and disinfected twice daily. All private, domestic and office drains are flushed regularly by the City Engineer's staff.

An improved type of fixture ash-bin was first supplied to Liverpool premises in 1898, and at the end of 1931 the number of bins in use of this type was approximately 88,000, the number of ashpits being reduced from 65,000 to approximately 3,250. In addition, more than 94,000 loose bins have been supplied. In the year 1900 an improved sanitary ashbin was introduced for the use of courts, some of which have been removed owing to property being demolished. The number in use at the end of the year was 1,086; these are emptied daily. Ashbins and ashpits on domestic premises are emptied approximately once weekly. The bell-cart service provides for the daily removal of domestic refuse from shops, business premises, and dwelling houses, where no provision can conveniently be made for the storage of this description of refuse. Horse middens are emptied weekly and more often if required.

ASHPITS.

To assist in the abolition of ashpits within the city, the Health Committee applied for and obtained special powers under the Liverpool Corporation Act, 1927, Section 157, which is as follows :—

“ Section 467 (Regulation Dustbins) of the Act of 1921 is hereby
 “ repealed and the Corporation may by notice in writing require
 “ the owner or occupier of any dwelling-house, warehouse or shop
 “ to provide and maintain in proper order and condition
 “ galvanised iron dust-bins in lieu of ash-pits or ash-tubs or other
 “ portable receptacles for refuse, and such bins shall be of such
 “ size and construction as may be approved by the Corporation,
 “ and any owner or occupier who fails within fourteen days after
 “ notice given to him to comply with the requirements of the Cor-
 “ poration shall for every such offence be subject to a penalty not
 “ exceeding five shillings. Provided that in any case where the
 “ Corporation under this Section require a galvanized iron dust-
 “ bin to be provided in lieu of any ash-pit or ash-tub or other
 “ portable receptacle for refuse in use on the 4th day of August,
 “ 1905, which at the time such requirement is made is of suitable
 “ size and construction and in good order and condition, the
 “ Corporation shall pay the cost of providing such galvanized iron
 “ dust-bin.”

Several applications have already been received by owners who desire to take advantage of this section of the provisions. Up to 31st December, 1931, 1,665 ashpits have been abolished under these powers.

All ashpit and ashbin refuse is emptied direct into the carts and motors, and all loaded carts and motors traversing the streets are covered.

The refuse collected is disposed of by burning at three destructors, by disposing at sea, by sale to farmers, and by controlled tipping for reclamation of land, operations being carried out in accordance with suggested regulations of the Minister of Health, to comply with which 65,480 tons of soil were used for covering the refuse disposed of at tips during the year.

During the year, 63,113 tons were burned at the destructors, 40,903 tons were deposited at sea by hopper barge, 21,342 tons were sold to farmers, etc., and 287,635 tons were otherwise disposed of at tips and for agricultural purposes, etc. In addition, approximately 19,629 tons of clinker residue from destructors were used almost entirely in the construction and maintenance of roads and tramways and in the manufacture of mortar and concrete slabs, etc.

SUPERVISION OF FOOD SUPPLIES

The duties in connection with the supervision of food supplies imposed upon the officers of the Health Department by various Acts and Orders are carried out by a fully qualified staff of food inspectors and others. The examination of the carcasses of animals slaughtered for food at the abattoirs and private slaughterhouses; the inspection of meat, fish and fruit at the various wholesale and retail markets; cold stores; and the inspection of shops, restaurants, etc., where foodstuffs are sold, prepared or stored for human food. Owing to the importance and importance of this work various difficulties have been encountered due to the large increase in the number of animals slaughtered during the last few years. The distance between points of inspection, and the limited number of inspectors available.

FOOD INSPECTION

There are two principal slaughterhouses and two smaller yards in the city, but none of the slaughterhouses are doing business at any time. Two of the slaughterhouses are doing business at any time. The inspection of private slaughterhouses, which are widely distributed over the city, is much of the time of the staff. During the past year 15,500 animals were slaughtered in the private slaughterhouses, and all carcasses were inspected before being allowed to be removed from the premises. The importance of the city as a meat distributing centre is demonstrated by the progressive increase in the number of carcasses dealt with, the total number of carcasses sold in the meat market being 1,132,314. The number of imported killed and frozen carcasses shows a slight decrease, while the number of animals slaughtered shows a large increase. The following statistics give the necessity of a definite and systematic food inspection service. During the year 1930, 120,410 animals were slaughtered at the abattoir, 41,500 carcasses were brought in already skinned from other sources, and there were 670,000 carcasses imported from Australia, New Zealand, South America and other countries. In addition to the above 15,500 animals were slaughtered for private slaughterhouses and 2,100 dressed carcasses were brought into the city for sale by retail butchers, making a total of 1,132,314 carcasses.

SUPERVISION OF FOOD SUPPLIES.

The duties in connection with the supervision of food supplies imposed upon the officers of the Health Department by various Acts and Orders are carried out by a fully qualified staff of food inspectors, and entail the examination of the carcasses of animals slaughtered for food at the abattoir and private slaughter-houses; the inspection of meat, fish and fruit at the various wholesale and retail markets and cold stores; and the inspection of shops, factories, etc., where foodstuffs are sold, prepared or stored for human food. Owing to the increasing growth and importance of this work serious difficulties have been encountered due to the large increase in the numbers of animals slaughtered during the last few years, the distance between points of inspection, and the limited number of inspector available.

There are ten private slaughter-houses and two knackers' yards in the city, but none of the slaughter-houses are being used to any great extent. Two are used solely for the slaughter of horses for export to Belgium and France for human food.

The inspection of private slaughter-houses, which are widely distributed over the city, takes up much of the time of the staff.

During the past year 15,856 animals were slaughtered in these private slaughter-houses, and all carcasses were inspected before being allowed to be removed from the premises.

The importance of the city as a meat distributing centre is demonstrated by the progressive increase in the number of carcasses dealt with, the total number of carcasses sold in the meat market being 1,132,215. The number of imported chilled and frozen carcasses shows a slight decrease, while the number of animals slaughtered shows a large increase.

The following statistics prove the necessity of a definite and systematic food inspection service:—During the year, 420,940 animals were slaughtered at the abattoir, 41,206 carcasses were brought in already dressed from other centres, and there were 670,069 carcasses imported from Australia, New Zealand, South America and other countries. In addition to the above, 15,856 animals were slaughtered in private slaughter-houses and 2,144 dressed carcasses were brought into the city for sale by retail butchers, making a total of 1,150,215 carcasses.

The carcasses of 7,254 animals showed abnormal conditions and a detailed examination was made in each case.

CASEOUS LYMPHADENITIS.

The prevalence of this disease in sheep carcasses imported into this country has required a thorough examination of consignments, and this as a rule has been carried out in the Cold Stores in the Port Sanitary area. In certain cases where arrangements have been made with the Port Sanitary Authority the examination of some of these carcasses, numbering 75,428 during the year, was carried out by the City staff. Consignments have also come by rail from London and have been dealt with by the same officers. This has added from time to time to the work of the City Food staff. The number represents a very small proportion of the total imports into this country.

TUBERCULOSIS ORDER, 1925.

This Order aims at the eradication of tuberculosis from milking herds and a purer milk supply, and compels owners of cows to notify the local authority of any sign of tuberculosis in the herd. Should an animal be suspected it is examined by the veterinary inspector, and if found to be suffering from tuberculosis it is slaughtered. Several such animals from the City and County were slaughtered at the Abattoir and the carcasses were examined as to their fitness or otherwise for human food by the Meat Inspectors. Further reference to this subject is made under the section dealing with Tuberculosis and the Milk Supply (see pages 250 and 251).

MERCHANDISE MARKS ACT, 1926.

This Act provides for the marking of "Imported" foodstuffs in order that the buying public may know whether they are buying "Foreign," "Empire," or "Home produced" foodstuffs. At present the Order applies to fresh apples, raw tomatoes, eggs (in shell or dried), currants, sultanas and raisins, oat products and honey.

AGRICULTURAL PRODUCE (GRADING AND MARKING)

ACT, 1928.

Regulations under this heading have been made whereby the quality of many home-produced goods is clearly indicated to the buyer and insures that buyers will be in a position to know when they are receiving home-grown products of a certain standard of quality.

Foodstuffs prepared and graded under these Regulations have one mark, "The National Mark," which makes it easy for buyers and gives them confidence. This mark conveys, by law, a guarantee that the quality of the produce is of the grade stated on the package or article.

Included in foodstuffs graded are :—Home-killed beef, eggs, dressed poultry, all English wheat flour, canned fruits and vegetables, tomatoes and cucumbers, apples and pears, strawberries and cherries, malt flour and malt extracts.

PUBLIC HEALTH (MEAT REGULATIONS), 1924.

The Regulations provide for better and cleaner methods of handling, storing and transport of meat, also for regulating private slaughter-houses and the inspection of meat. Much progress has been made, and the objectionable practice of exposing meat in open shop fronts has now ceased, as has also the hanging of bacon outside provision shops to dry.

PRIVATE SLAUGHTER-HOUSES.

There are 10 private slaughter-houses in the city, which have been well conducted and kept in good condition. Some of these slaughter-houses are situated in cramped and congested positions, and are not suitable places for the slaughter of animals.

ABATTOIR.

For several years the Medical Officer of Health has been advocating the provision of an Abattoir and Meat Market commensurate with other branches of public health work in the city. This long-delayed reform has been accomplished and in October of this year the extensive premises at Stanley, including Meat Market, Slaughter-halls, Cold Stores, Cooling Rooms and Cattle Market, were opened.

The capacity of the Meat Market and Slaughter-halls has been severely taxed as all classes of slaughter have greatly increased, cattle shewing an increase of 3%, sheep 52% and pigs 83%.

For a full description of the new abattoir see report of the Medical Officer for the year 1930.

ANIMALS SLAUGHTERED FOR HUMAN FOOD IN THE CITY

	Bulls	Bullocks.	Cows.	Heifers.	Calves.	Sheep.	Lambs.	Goats.	Swine.	Horses
Public Abattoir	642	16,044	8,604	2,004	23,537	37,001	279,624	203	53,281	—
Private Slaught- er-houses ...	—	112	—	33	2	—	2,650	—	12,203	856
TOTAL ...	642	16,156	8,604	2,037	23,539	37,001	282,274	203	65,484	856

There are no shops in the city where horse-flesh is sold for human food, but 856 horse carcasses were inspected and stamped by the food inspectors before leaving the slaughter-house for export to Belgium and France. Fourteen carcasses were rejected as unfit for human food.

CARCASSES TOTALLY OR PARTIALLY DESTROYED.

Disease.	No.	Disease.	No.
Abscess, partial	10	Joint Ill	7
Arthritis total (Septic)	53	Melanosis	1
„ partial	89	Nephritis	5
Asphyxia	235	Neoplasms (Malignant)	2
Caseous Lymphadenitis	22	Pyæmia	16
Dropsy	235	Peritonitis Septic	41
Decomposition, total	49	Pneumonia	103
„ partial	297	Pleurisy	2
Distomatosis	275	Septicaemia	15
Emaciation	379	Septic Mastitis	5
Enteritis	131	„ Metritis	21
Gastritis	4	„ Pericarditis... ..	4
Gangrene	2	Swine Fever	22
Immaturity	20	Sarcoma	1
Injury, total	40	Swine Erysipelas	6
„ partial	790	Tuberculosis, total	392
Johnes Disease	2	„ partial	679
Jaundice	45		

During the year 2,135 carcasses were rejected as unfit for human food, in addition to which 867 were destroyed at the knackers' yards.

ORGANS DESTROYED.

Disease.	No.	Disease.	No.
HEADS AND TONGUES :—		HEARTS :—	
Tuberculosis	3,555	Tuberculosis	2571
Abscess	243	Congestion	517
Actinomycosis	41	Decomposition	329
Decomposition	131	Pericarditis	90
Swine Fever Contacts	10	SPLEENS :—	
Injury	1	Tuberculosis	1035
Melanosis	3	Decomposition	5
LUNGS :—		STOMACHS :—	
Tuberculosis	4,315	Tuberculosis	1053
Congestion	2,668	Abscess	3
Unclassified Cystic Conditions	1,703	KIDNEYS :—	
Abscess	633	Tuberculosis	1074
Pneumonia	372	Decomposition	155
Decomposition	584	Cysts	44
Pleurisy	21	Cirrhosis	37
Melanosis	4	Nephritis	4
LIVERS :—		UDDERS :—	
Tuberculosis	3,297	Tuberculosis	16
Distomatosis	9,234	Mammitis	470
Echinococci	4,426	Actinomycosis	11
Decomposition	1,063	Abscess	22
Abscess	516	Injury	38
Cirrhosis	1,704	INTESTINES :—	
Cav. Angioma	399	Tuberculosis	3360
Necrosis	2		

QUANTITIES OF FISH, RABBITS, POULTRY AND GAME WHICH PASSED THROUGH THE WHOLESALE MARKET.

	FISH.				RABBITS.	POULTRY.	GAME.
	Wet. Tons.	Dry. Tons	Shell. Tons.	Salmon. Tons.	No. of Packages.	No. of Packages.	No. of Packages.
1931	22,216	4,183	927	51	9,946	9,939	34

The above figures do not include packages of fish, rabbits, etc., dealt with by firms not under the control of the Markets Committee

FRUIT, VEGETABLE AND FISH MARKETS.

Large consignments from all over the world passed through the fruit markets during the year. The wholesale depot in Queens Square

Liverpool, is the principal distributing centre in the country for imported fruit, and during the year 107,648 tons of vegetables (60% of potatoes and 40% of other vegetables) passed through the vegetable market.

The supplies of fruits and vegetables have been well maintained, and the condition has generally been good. A certain amount of sorting had, however, to be undertaken before the goods were sold, and this was supervised by our Food Inspectors.

Certain new methods of packing tomatoes from the Canary Islands have been introduced, notably the packing in cartons, each tomato being wrapped in paper and placed in boxes with cardboard divisions after the manner of packing eggs. This method is an improvement on the old method of packing tomatoes in peat.

Very heavy consignments of potatoes have arrived from Germany, Belgium and Poland. Malta potatoes have again appeared on the market after a few years' absence.

Fish supplies have been good. A fair amount has been landed from Liverpool trawlers including the following, viz. :—Cod 14,212 stone, hake 41,582 stone, plaice 28,572 stone, soles, turbot and brill 3,598 stone, and other fish 200,163 stone. Large quantities from other ports arrived in the city daily by rail and road.

Supplies of imported Atlantic and Pacific salmon were very large.

Samples of all shellfish are periodically submitted for bacteriological examination.

The amounts of fruit, vegetables and fish, dealt with during the year as unsound, are recorded in a later paragraph.

PREMISES VISITED BY THE FOOD INSPECTORS.

Slaughter houses.	Butchers' shops.	Fruit shops.	Fish & Fruit shops.	Food Hawkers' premises.	Jam factories.	Pickle factories.	Food factories.	Knackers yards.	Total Visits Paid
4,269	27,715	30,036	27,690	2,372	77	92	410	14	92,675

Sixty-seven samples of foodstuffs were obtained for bacteriological and analytical examination, including fish, shellfish, meat, fruit and canned food. The following foodstuffs were condemned as unfit for human food, viz. :—Beef, mutton, pork, veal and lamb, 724,697 lbs.; wet and dry fish, 166,295 lbs.; mussels, cockles and winkles, 70 packages; crabs, lobster, crayfish and prawns, 3,281 lbs.; poultry, 3,482 head; game, 165 head; rabbits, 4,682 head; fruit 690,010 lbs.; vegetables, 230,591 lbs.; canned foodstuffs, 6,755 tins; eggs, 96; egg pulp, 22 lbs.; cokernuts, 950; walnuts, 2,184 lbs.; margarine, 8 lbs.; yeast, 32 lbs.

DAIRIES, COWSHEDS AND MILKSHOPS.

There has been no change in the method of procedure respecting the licensing of cowsheds, and the registration of dairies, milkshops and milk stores during the year.

THE AVERAGE DAILY MILK SUPPLY FOR 1931 WAS AS FOLLOWS :—

Milk produced from cows kept in the city ...	10,680	galls. per day
„ „ outside the city—Road transport...	22,801	„ „ „
„ „ „ „ —Rail transport ...	10,473	„ „ „
	43,954	

The different classes of milk and the approximate daily consumption of each are summarised as follows :—

Graded Milk.

MILK SOLD UNDER THE MILK (SPECIAL DESIGNATIONS) ORDER, 1923.

The chief requirements of each grade may be summarised as follows :—

(a) “ CERTIFIED ” (The highest grade).

- (i) Herd to be tuberculin-tested every six months.
- (ii) Herd to be completely isolated from other cattle.
- (iii) Milk to be bottled on the farm immediately after production.
- (iv) Every bottle to be sealed completely by a suitable disc and cap.
- (v) Bacterial standards, maximum 30,000 per c.c. and no coliform bacillus in $\frac{1}{10}$ c.c.
- (vi) No treatment by heat permitted.

(Approximate Daily Supply—66 gallons)

(b) "GRADE A (TUBERCULIN TESTED)" (The second grade).

- (i) and (ii) The same conditions as for "certified."
- (iii) Milk to be retailed in bottles, or in other suitable containers of not less capacity than two gallons, except where delivered in containers as received from the farm, but may be bottled and sealed off the farm.
- (iv) Unless output is bottled and sealed it is to be consigned in unventilated sealed containers, suitably labelled.
- (v) Bacterial standards; maximum 200,000 per c.c. and no coliform bacillus in $\frac{1}{100}$ c.c.
- (vi) No treatment by heat permitted.

(Approximate Daily Supply—1,175 gallons).

(c) "GRADE A" (The third grade).

- (i) Herd to be subject to clinical examination every three months.
- (ii) Cows in milk belonging to the herd to be kept separate from all other cows in milk.
- (iii) (iv) (v) (vi) As for "Grade A (Tuberculin tested)."

(Approximate Daily Supply—381 gallons).

"GRADE A (PASTEURISED)" (A sub-grade of (c)).

Requirements as for "Grade A" except as follows:—

- (i) Pasteurisation permitted by recognised process (see below).
- (ii) Bacterial standards, maximum 30,000 per c.c., and no coliform bacillus in $\frac{1}{10}$ c.c.

(Approximate Daily Supply—None).

(d) "PASTEURISED" (a recognised process rather than a grade for ordinary milk).

- (i) Pasteurisation to be by the "Positive Holder" method, i.e., retention for at least half an hour between 145° and 150° F. and immediately cooled to a temperature of not more than 55° F.

- (ii) No treatment more than once by heat.
- (iii) Recognised plant and equipment to be employed.
- (iv) Bacterial standard, maximum 100,000 per cc.

(Approximate Daily Supply—150 gallons).

Although the Milk (Special Designations) Order has been in force since 1923, the quantity sold is small compared with that of ordinary milk.

To produce "graded milk" a considerable amount of initial expenditure is entailed, especially for the production of the "tubercle-free milk." In comparison the price of the designated "tubercle-free milk" is much higher than that of ordinary (bulk) milk, and until such time as the price is reduced the demand for "graded" milk will be relatively small, as unfortunately the fact that one milk is dearer than another is the only circumstance considered by the average person, and the difference in quality is ignored.

Grading should not imply that all other milk is suspect, but that milk differs in quality, keeping power, and other factors which make it worth while for consumers to differentiate between the classes. The Department endeavours to bring to the notice of the public the advantages of using these specially designated milks, and all possible assistance and information are given both to dealers and consumers.

Ungraded Milk.

UNGRADED MILK PRODUCED FROM COWS KEPT IN THE CITY.

The Liverpool cowkeeper is a producer-retailer and usually obtains the same price for his milk as he would receive were he to sell it as "Grade A," and he has therefore no inducement to change and pay the high fees required, as presumably his customers do not consider the milk differs in quality, keeping powers, and other factors which would make it worth their while to leave him and purchase "Grade A" milk.

The cattle are regularly inspected by the Corporation Veterinary Officers, and the premises are kept under strict supervision. The milk is clean milked, and the bulk is cooled by refrigerator to a temperature not more than a few degrees Fahrenheit higher than the temperature of the Liverpool water supply; at no stage is this milk treated by heat.

(Approximate Daily Supply—10,680 gallons).

For further report see page 234.

UNGRADED MILK FROM FARMS OUTSIDE THE CITY.

This constitutes the greater proportion of Liverpool's milk supply, and it is sold without differentiation of quality. The wholesaler and large retail dairymen purchase their supplies under contracts which embody clauses to the effect that the milk shall be absolutely pure new milk, clean and cooled. The bulk of this milk might easily come within the "Grade A" standard.

(Approximate Daily Supply—14,213 gallons).

MILK PASTEURISED BY THE "POSITIVE HOLDER" METHOD

but not under licence, and sold as ordinary bulk milk.

The process is exactly similar to the officially recognised "Pasteurised Milk" (see Pasteurised Milk).

(Approximate Daily Supply—11,086 gallons).

Sterilised Milk.

In the process of sterilisation the treatment of milk by heat is carried a stage further than in "Pasteurisation." The milk is cleaned and pre-heated, and is then "homogenised," that is, the fat globules are split up, and evenly and uniformly distributed throughout the milk; this prevents creaming afterwards. The milk is then cooled and bottled. Sterilisation is completed by placing the bottles in tanks of water with only their necks protruding. The water is heated up to 210° to 212° F. which causes expansion of the milk. The stoppers are fastened down, and the bottle gradually cooled. Cooling causes contraction of the milk, thus creating a vacuum in the neck of the bottle, and incidentally providing an effective seal.

(Approximate Daily Supply—6,203 gallons).

Fluid milk, owing to its high degree of perishability, calls for an exacting standard of care and clean handling in its production and delivery. In this respect milk stands alone among the important foods of the public.

Throughout the whole city the Milk Acts and Orders are being satisfactorily carried out. The progress made as regards the hygiene of cowsheds and dairies is maintained. This is due to systematic and regular observations, and the educational propaganda work of the Department. Suggestions made by the inspectors are welcomed by the trade, and are generally accepted and adopted.

BACTERIOLOGICAL EXAMINATION OF MILK.

There is no doubt that, as a result of the educational work undertaken during the past 10 or 20 years among farmers and others, an improvement has taken place in the general hygienic production of milk; the education of the public, the introduction of grading of milk, and clean milk competitions having favourably effected the result.

The subject of the cleanliness of ordinary milk is considered important from many points of view besides that of local interest. The results recorded may be of interest to others who are engaged in carrying out similar investigations, and may assist in obtaining collaboration in different parts of the country. A beginning has therefore been made to report the results of bacteriological examination of milks of various grades so that a true measure of the cleanliness of this important food may be obtained. The following graded milks have been examined by the City Bacteriologist during the year, and the details of the numbers of bacteria present have been kindly supplied by him.

Certified Milk. The bacterial content of samples of this class of milk before delivery, as set out in the Order, must not exceed 30,000 bacteria per cc. and colon bacilli must be absent in one-tenth cc. Samples are examined monthly for the Ministry of Health. The results show that certified milk is well up to standard.

Supplied by	Number of samples	Where taken	Bacteria Present per c.c.		Colon Bacilli		Present in $\frac{1}{10}$ c.c.
			Under 20,000	Over 20,000	Absent in 1 c.c.	Present in 1 c.c.	
A	12	City depot	12		11	1	Nil.
B	5	Do.	5	Nil	4	1	Nil.

"Grade A (Tuberculin Tested)" Milk. The bacterial content of samples under the Order must not exceed 200,000 bacteria per c.c. and colon bacilli should be absent in one-hundredth c.c.

Supplied by	Number of samples	Where taken	Bacteria present per c.c.		Colon Bacilli		Present in $\frac{1}{10}$ c.c.	Present in $\frac{1}{100}$ c.c.
			Under 20,000	Over 20,000	Absent in 1 c.c.	Present in 1 c.c.		
A	13	Farms	13	Nil.	12	1	Nil.	Nil.
B	12	City depot	10	2	11	1	Nil.	Nil.
C	12	Do.	12	Nil.	10	2	Nil.	Nil.

From an examination of the above figures and from other returns made from time to time by the City Bacteriologist it would seem that the graded milks as delivered in the city remain well under the limit of bacterial content allowed in the Milk (Special Designations) Order of 1923—in fact, it is seldom that the Grade A (Tuberculin Tested) Milk sold and delivered in this city exceeds the limit laid down for the higher grade Certified Milk. A high standard may also generally be obtained in Grade A Milk.

It must not be forgotten that temperature has an important influence on the bacterial content of milk. In spite of this it has been pointed out that milk of these types which reaches the consumer within 24 hours of milking seldom fails to maintain the necessary standards, and souring is infrequent. The cooling of milk and rapid transport have

therefore great importance in this matter of bacterial content on delivery to the consumer. The failure, where it does occur, to maintain the standard during the warmer months of the year, June to August, shows the importance of efficient cooling.

Ungraded Milk—The City is supplied with approximately 24,000 gallons daily of ungraded milk, of which 14,000 are from the country, and 10,000 are supplied by Liverpool's 3,560 cows. Up to the present time it has not been possible to examine ungraded country milks for bacterial content, it is hoped that this will be done at a later date, but the ungraded milks produced in the city have received special attention, and the results are herewith recorded.

The samples of ungraded milk reported on during the year 1931 and tabulated in the subjoined table are from ordinary milk produced from cows in the city untreated and ungraded. The milk is from cows milked at 6 a.m., and may have been kept on the counter of the milk-shop from 7 a.m. for some hours before samples were taken, even as late as 11 a.m. or in the afternoon. As sales have gone on during this period the measure has been dipped into the milk many times. Under these circumstances the results leave a very favourable impression as to the cleanliness and bacterial content of the Liverpool milk supply, as recorded by the number of bacteria found per cubic centimetre. It will be observed that of the total number of 340 samples over 50 per cent. contained 30,000 bacteria and under, and 30 per cent. ranged between 30,000 and 200,000, this latter figure being the maximum standard laid down for Grade A and Grade A (Tuberculin Tested) milks, whilst only 15 per cent. may be said to have an excessive number of organisms present. As regards colon bacilli, almost 25 per cent. showed the *absence* of the organism in 1 c.c., whilst a similar percentage showed the presence of the organism in 1 c.c., and combined with the percentage showing a low presence of bacteria, supports the view that a great improvement has been effected in the clean production of this important food in Liverpool.

The samples were taken from the supplies of 200 separate dealers.

**BACTERIOLOGICAL EXAMINATION OF *UNGRADED, UNTREATED*
TOWN SAMPLES OF MILK TAKEN DURING 1931.**

(From 200 separate dealers.)

Month.	Number of Samples	Bacteria present per c.c.				Colon Bacilli.			
		30,000 and under	30,000 to 200,000	200,000 and over.	Absent in 1 c.c.	Present in			
						1 c.c.	$\frac{1}{10}$ c.c.	$\frac{1}{100}$ c.c.	$\frac{1}{1,000}$ c.c.
January ...	21	12	6	3	6	5	5	3	2
February	37	27	9	1	10	7	12	6	2
March ...	18	11	3	4	6	7	2	1	2
April ...	18	14	2	2	Nil	4	8	4	2
May ...	38	17	13	8	5	9	13	4	7
June ...	27	10	9	8	4	7	5	2	9
July ...	27	18	4	5	2	6	8	7	4
August ...	21	11	3	7	5	1	8	3	4
September	13	5	7	1	2	1	5	2	3
October ...	43	22	17	4	15	14	8	Nil	6
November	37	16	15	6	12	6	6	9	4
December	40	21	17	2	15	14	5	Nil	6
TOTAL ...	340	184	105	51	82	81	85	41	51
Percentage of total Samples	—	54·1	30·9	15	24·1	23·8	25	12	15

**PRESENCE AND GROWTH OF BACTERIA IN MILK
AND CREAM.**

The extent of the presence of numbers of bacteria in milk and cream in the various stages of production and distribution is one of great interest, and whilst standards have been laid down for milk of various kinds, especially graded milks, there seems so far to be no standard fixed for cream. It is a difficult problem to settle, but tests were suggested with a view to help towards this end. The Medical Officer of Health therefore requested the City Bacteriologist to assist in this investigation, with which he readily concurred. The bacteriological

contents of several good standard milks and the creams obtained from them were also investigated. In order to complete this preliminary work the samples were retained for varying periods after receipt at the laboratories, some being kept at the ordinary laboratory temperature of 21° C., and others in the cool chamber at 3° C.; and the increase in the number of organisms over varying periods was compared. The following account is a short summary from the bacteriological reports received from the laboratories. The investigation originated from a report on samples of fresh cream which were examined in this city for bacterial content, the results showed the presence of organisms varying from 500,000 to 5,000,000 per cubic centimetre, whereas colon bacilli were present in 1/10,000th part of a cubic centimetre. These results were considered to be very unsatisfactory and initiated the investigation mentioned so that standards might be obtained for milk and cream produced and distributed under clean conditions and that produced and distributed under unfavourable circumstances.

A preliminary test was made to find out what average increase in bacteria takes place in good milk at 24-hour intervals, both at the ordinary room temperature (21° C.) and in the ice chest at about 3° above freezing.

FIVE SAMPLES OF GRADE A (T.T.) MILK AND CREAM THEREFROM
TAKEN LOCALLY AT THE EVENING MILKING (4 p.m.) AND EXAMINED
WITHIN A VERY SHORT TIME.

					SAMPLES KEPT AT 21° C.	
					Bacteria per c.c. Milk A.	<i>B. coli</i> (whole milk)
Jan. 11th ...	...	...	...	...	330	neg. in 1 c.c.
Cream taken from the above samples.						
„ 12th ...	...	...	...	...	1,500	neg. in 1 c.c.
„ 13th ...	...	...	...	...	1,260,000	neg. in 1 c.c.
„ 14th ...	...	...	...	...	innumerable	neg. in 1 c.c.
„ 15th ...	...	...	...	...	innumerable	neg. in 1 c.c.

SAMPLES KEPT AT 3° C.

	Bacteria per c.c.				<i>B. coli.</i>			
	Milk B	C	D	E	B	C	D	E
Jan 11.	310	480	380	400	neg.in 1 c.c.	neg.in 1 c.c.	neg.in 1 c.c.	neg.in 1 c.c.
Cream taken from the above samples								
Jan. 12	1,900	1,200	1,800	1,800	neg.in 1 c.c.	neg.in 1 c.c.	neg.in 1 c.c.	neg.in 1 c.c.
Jan. 13	5,500	6,000	6,900	3,500	neg.in 1 c.c.	neg.in 1 c.c.	neg.in 1 c.c.	neg.in 1 c.c.
Jan. 14	9,600	10,000	11,000	18,600	neg.in 1 c.c.	neg.in 1 c.c.	neg.in 1 c.c.	neg.in 1 c.c.
Jan. 15	25,000	107,000	66,000	27,000	neg.in 1 c.c.	neg.in 1 c.c.	neg.in 1 c.c.	neg.in 1 c.c.

The samples of whole milk (milk and cream) were very good. In 24 hours the total bacteria in the cream showed fairly uniform increase; later there was a more rapid increase even at the lower temperature. *Bacillus coli* was entirely absent in 1 c.c. throughout the samples.

An endeavour was made to estimate the increase of bacteria at shorter intervals and to compare the increase in the cream with that in the milk under similar conditions.

SIX SAMPLES OF GRADE A (T.T.) MILK AND CREAM TAKEN LOCALLY AT THE EVENING MILKING (4 p.m.), A SERIES OF SAMPLES SIMILAR TO THOSE IN PRECEDING EXAMINATION.

	SAMPLES KEPT AT 21° C.			
	Bacteria per c.c.		<i>B. coli</i>	
	Whole Milk A	Cream D.	Whole Milk A.	Cream D.
Jan. 4, p.m.	800	600	neg. in 1 c.c.	neg. in 1 c.c.
Jan. 5, a.m.	9,600	90,000	neg. in 1 c.c.	present in 1 c.c.
Jan. 5, p.m.	216,000	360,000	neg. in 1 c.c.	present in 1 c.c.
Jan. 6, a.m.	innumerable	innumerable	present in 1 c.c.	present in 1/100,000 c.c.
Jan. 6, p.m.	innumerable	innumerable	present in 1/100,000 c.c.	present in 1/100,000 c.c.

	SAMPLES KEPT AT 3° C.							
	Bacteria per c.c.				<i>B. coli.</i>			
	Milk B.	Milk C.	Cream E.	Cream F.	Milk B.	Milk C.	Cream E.	Cream F.
Jan. 4, p.m.	330	640	750	450	neg.in 1c.c.	neg.in 1c.c.	neg.in 1c.c.	neg.in 1c.c.
Jan. 5, a.m.	400	800	950	1,050	neg.in 1c.c.	neg.in 1c.c.	neg.in 1c.c.	neg.in 1c.c.
Jan. 5, p.m.	300	700	1,900	1,500	neg.in 1c.c.	neg.in 1c.c.	neg.in 1c.c.	neg.in 1c.c.
Jan. 6, a.m.	610	1,980	2,600	2,200	neg.in 1c.c.	neg.in 1c.c.	neg.in 1c.c.	neg.in 1c.c.
Jan. 6, p.m.	550	2,400	2,800	3,000	neg.in 1c.c.	neg.in 1c.c.	neg.in 1c.c.	neg.in 1c.c.

The examinations on January 4th of milks A B and C were of whole milk (milk and cream), subsequent examinations were in A B and C milk alone, and in D E F cream alone. Milk A and cream D were kept at the temperature of 21° C., the average ordinary daily temperature of the room. The samples B C E and F were kept in the ice chest at 3° C.

Though the total bacteria in the milk and cream at the beginning were approximately equal, there is a much greater multiplication of organisms in the cream kept at room temperature than in milk kept at the same temperature. Further, it may be noticed that *Bacillus coli*, which was not evident at the first examination of the mixed milk and cream appears first in the cream and some hours later in the milk.

At the temperature of 3° C. the same applies though in very much less degree.

In certain isolated instances throughout these and the other bacteriological counts there are fluctuations, within certain small limits, in the numbers of bacteria which are easily capable of explanation but which do not affect the general results obtained.

In order to test the growth of organisms in a good Grade A (T.T.) milk coming from the country and delivered in the city at one of the central distributing centres, the following examination of such milk was made. The sample was taken five hours after milking.

SIX SAMPLES (A, B, C, D, E, F) OF GRADE A (T.T.) WHOLE MILK OR CREAM
THEREFROM AS DELIVERED IN THE CITY FIVE HOURS AFTER MILKING

	SAMPLES KEPT AT 21° C.							
	Bacteria per c.c.				<i>B. coli.</i>			
	Milk A.		Cream B.		Milk A.		Cream B.	
Feb. 20, a.m.	1,200		2,460		neg. in 1 c.c.		neg. in 1 c.c.	
Feb. 20, p.m.	1,620		7,200		neg. in 1 c.c.		neg. in 1 c.c.	
Feb. 21, a.m.	2,380,000		9,600,000		present in 1/100,000cc.		present in 1/100,000cc.	
Feb. 21, p.m.	3,780,000		innumerable		present in 1/100,000cc.		present in 1/100,000cc.	
Feb. 22, a.m.	7,200,000		innumerable		present in 1/100,000cc.		present in 1/100,000cc.	
Feb. 22, p.m.	innumerable		innumerable		present in 1/100,000cc.		present in 1/100,000cc.	

	SAMPLES KEPT AT 3° C.							
	Bacteria per c.c.				<i>B. coli.</i>			
	Milk C.	Milk D.	Cream E.	Cream F.	Milk C.	Milk D.	Cream E.	Cream F.
Feb. 20, a.m.	800	4,200	2,300	4,000	neg. in 1 c.c.	neg. in 1 c.c.	neg. in 1 c.c.	neg. in 1 c.c.
Feb. 20, p.m.	700	5,200	2,400	9,600	neg. in 1 c.c.	neg. in 1 c.c.	neg. in 1 c.c.	neg. in 1 c.c.
Feb. 21, a.m.	1,080	10,200	3,800	13,200	neg. in 1 c.c.	neg. in 1 c.c.	neg. in 1 c.c.	neg. in 1 c.c.
Feb. 21, p.m.	1,200	14,400	4,200	14,400	neg. in 1 c.c.	neg. in 1 c.c.	neg. in 1 c.c.	neg. in 1 c.c.
Feb. 22, a.m.	—	22,200	5,400	12,600	neg. in 1 c.c.	present in 1/100 c.c.	neg. in 1 c.c.	neg. in 1 c.c.
Feb. 22, p.m.	—	31,200	8,000	16,200	neg. in 1 c.c.	present in 1/100 c.c.	neg. in 1 c.c.	neg. in 1 c.c.

TWO SAMPLES OF TOWN WHOLE MILK (A and B) AND TWO SAMPLES OF
CREAM (C and D) THEREFROM AND UNHEATED.

	SAMPLES KEPT AT 21° C.			
	Bacteria per c.c.		<i>B. coli.</i>	
	Milk A.	Cream C.	Milk A.	Cream C.
Feb. 18	2,860	2,940	present in 1 c.c.	present in 1 c.c.
Feb. 19	1,260,000	5,400,000	present in 1/100,000 c.c.	present in 1/100,000 c.c.
Feb. 20	8,400,000	innumerable	present in 1/100,000 c.c.	present in 1/100,000 c.c.
Feb. 21	innumerable	innumerable	present in 1/100,000 c.c.	present in 1/100,000 c.c.

			SAMPLES KEPT AT 3° C.			
			Bacteria per c.c.		<i>B. coli.</i>	
			Milk B.	Cream D.	Milk B.	Cream D.
Feb. 18	...	...	2,050	2,400	neg. in 1 c.c.	present in 1 c.c.
Feb. 19	...	...	2,800	12,600	present in 1 c.c.	present in 1 c.c.
Feb. 20	...	...	4,760	24,000	present in 1 c.c.	present in 1 c.c.
Feb. 21	...	...	7,800	84,000	present in 1 c.c.	present in 1 c.c.

Further tests were now made on cream, some fresh whole cream was examined and also pasteurised cream.

TWO SAMPLES (A AND B) OF FRESH WHOLE CREAM (SLIGHTLY HEATED) PRODUCED IN THE NEIGHBOURING COUNTY AND TAKEN AT THE CITY DEPOT.

			SAMPLE A KEPT AT 21° C.		SAMPLE B KEPT AT 3° C.	
			Bacteria per c.c.	<i>B. coli.</i>	Bacteria per c.c.	<i>B. coli.</i>
Feb. 17	...	...	3,400	neg. in 1 c.c.	4,500	neg. in 1 c.c.
Feb. 18	...	...	288,000	present in 1/100,000 c.c.	8,400	present in 1/10 c.c.
Feb. 19	...	...	1,080,000	present in 1/100,000 c.c.	174,000	present in 1/10 c.c.
Feb. 20	...	...	1,920,000	present in 1/100,000 c.c.	600,000	present in 1/10 c.c.

FOUR SAMPLES (A, B, C, D) OF PASTEURISED CREAM: A AND B FROM COUNTY PASTEURISING PLANT, AND C AND D FROM CITY PASTEURISING PLANT AND FROM GENERAL MILK SUPPLY.

			SAMPLES KEPT AT 21° C.		SAMPLES KEPT AT 3° C.	
			Bacteria per c.c.		Bacteria per c.c.	
			Cream A.	Cream B.	Cream C.	Cream D.
Feb. 4 ...	...	...	690	290	110	140
Feb. 5, a.m.	...	...	18,000	6,600	900	600
Feb. 5, p.m.	...	...	540,000	12,600	1,200	550
Feb. 6 ...	...	...	innumerable	innumerable	5,400	960
Feb. 7 ...	...	...	innumerable	innumerable	9,600	1,100

The *Bacillus coli* was absent in 1 c.c. in all the above samples of pasteurised cream throughout the period of examination.

The organisms present in all the samples were principally spore bearing bacilli.

In order to obtain a reasonable bacterial standard for cream, tests must first be made with milk of the best bacterial quality. This milk is fortunately available in this city and has been utilised in the experiments. Some of the milk contained, one might say, the minimum number of bacteria possible to obtain under the best conditions of production, cooling and rapid distribution. It must be noted that the experiments were carried out in the months of January and February of 1932 when the mean daily temperature ranged from 42° - 52° in the beginning of January to 36° - 44° in the latter half of February. Having determined this aspect of the investigation the rate of growth of the organisms in milk and cream under varying conditions of temperature engaged attention. From the tests made it is obvious that several exceedingly high standard milks, as regards bacterial content, are delivered in Liverpool and it is from this as a basis that the experiments in cream have been made. The comparison of the growth of the organisms in milk and cream is interesting, e.g., whilst the total bacteria in milk and cream at the beginning of some of the experiments were approximately equal, the organisms in the cream showed a greater growth in numbers. This occurred both at the normal room temperature and at the lower chill-room temperature. From the results obtained it is evident that as cream is largely utilised for various household and other purposes, such as for the manufacture of ice-cream, for the use of invalids and children, etc., it becomes desirable to control the bacterial quality in a similar way to that now adopted for milk. The sanitary requirements of its production and distribution should be similar to those set out in the Milk and Dairies Order, 1926, and similar Regulations issued with the object of obtaining a clean milk supply. Many interesting points have also evolved from the recorded results which cannot all be considered now, but it is hoped that the results may assist those engaged in considering these matters to arrive at a satisfactory bacterial standard for cream.

STATISTICS.

COWSHEDS.

1931

Number of applications to keep cows on premises not previously licensed	...	...	...	...	...	...	3
„ applications granted	..	...	...	...	...	...	3
„ cows applied for	...	...	...	...	...	...	12
„ „ granted	...	...	...	...	...	...	12
„ applications for transfer to fresh tenants of cowsheds previously licensed	...	...	...	...	...	...	20
„ applications granted	...	...	...	...	...	...	16
„ „ in abeyance pending alterations	...	...	...	...	...	...	4
„ „ to keep additional stock	...	...	...	...	...	...	5
„ „ granted	...	...	...	...	...	...	5
„ additional cows applied for	...	...	...	...	...	...	51
„ „ „ granted	...	...	...	...	...	...	51
„ cowsheds on the register 31st December, 1930	...	...	...	...	...	...	276
„ cows licensed to be kept within the city area	...	...	...	...	...	...	4,878
Average number of cows	„	„	„	„	„	„	3,560

COWSHED INSPECTIONS.

	1930.	1931.
Number of inspections of cowsheds	2,024	2,034
„ found incorrect	59	35

Thirty-five notices were issued to occupiers directing their attention to minor contraventions, which were at once complied with, prosecutions being unnecessary.

The number of cowsheds in the city during the years 1927 to 1931, inclusive, together with the number of cows licensed to be kept, and the number of applications for new cowsheds, are shewn in the following table:—

Years	Cowsheds	Cows	Applications.
1927	273	4,723	2
1928	276	4,854	25
1929	282	4,916	18
1930	281	4,931	6
1931	276	4,878	3

DAIRIES AND MILKSHOPS.

	1930.	1931
Number of new applications for registration ...	36	45
„ transfers ...	86	79
Total number of applications ...	122	124
Number of applications granted ...	108	109
„ „ withdrawn ...	13	14
„ „ in abeyance ...	1	1
Number of milkshops on the register at the end of 1927...		790
„ „ „ „ 1928...		808
„ „ „ „ 1929...		795
„ „ „ „ 1930...		785
„ „ „ „ 1931...		791

DAIRIES AND MILKSHOP INSPECTIONS.

	1930.	1931.
Number of inspections of dairies and milkshops ...	7,967	8,210
„ found incorrect ...	56	58

Fifty-eight caution notices were issued to occupiers of milkshops for minor contraventions, which were at once complied with, prosecutions being unnecessary.

Observations are made at railway stations to ensure that sections 28 and 29, Milk and Dairies Order, 1926, are being complied with. Nineteen notices were sent during the year to farmers outside the city drawing their attention to defective milk churns; these notices have resulted in a great improvement as regards the type of churn now being sent to Liverpool.

PURVEYORS OF MILK.

In addition to the registered milkshops there are 109 registered purveyors of milk, who, having no dairies of their own, are registered at the dairy from which their milk is obtained, and where their cans and utensils are stored.

Routine visits are paid to these purveyors at their homes and in the streets. They are also checked at the wholesalers' dairies at which they are registered.

LIVERPOOL CORPORATION ACT, 1921 (SEC. 450).

ICE CREAM MAKERS AND VENDORS.

Systematic inspections have been made by the Sanitary Inspectors of premises utilised by street traders solely for manufacturing ice cream.

The dwellings which these street traders occupy have also been kept under observation, and in no instance during the past year has it been found that ice cream has been made or stored in or about these dwellings.

			<u>1931.</u>
Number of premises under inspection	...	...	1,595
„ visits made during the year	...	...	3,828

PIGGERIES.

There were fifteen applications, involving the keeping of 299 pigs, made during the year, five of these were new applications for licence to keep 154 pigs, and all were granted.

The majority of premises licensed are situated in open country in which pigs can be kept without infringement of the requirements.

There are now within the city area 131 premises where 4,543 pigs are licensed to be kept. The approximate number of pigs kept is 3,079.

673 visits of inspection to piggeries were made during the year.

TUBERCULOSIS AND THE MILK SUPPLY.

The following information of the work of the department during the year has been extracted from the report kindly supplied by the Chief Veterinary Officer :—

The year has not been marked by any changes of moment regarding the milk supply of the city.

Approximately one-third of the total milk supply is produced within the city, and the remaining two-thirds are sent in from country districts. The tendency is for the country-produced milk to increase in amount while that produced locally remains stationary or falls slightly.

MILK PRODUCED WITHIN THE CITY.

The estimated cattle population of the city comprises 3,560 dairy cows and a small number of bulls, stores and young stock. The total licensed city cowsheds number 276, with provision for 4,878 cows.

During the year, 33 cases of tuberculosis of the udder and 2 cases "giving tuberculous milk" were detected among city cattle, in addition to various other forms of scheduled disease. Of the 35 cases, 13 were found during routine clinical examination, 6 were reported as suspect by the respective owners, 15 resulted from bulk samples of milk taken by the Medical Officer of Health's Department being tuberculous, and one, not seen alive, was notified and dealt with privately by the owner's veterinary surgeon.

Of 53 cows notified by the owners or their veterinary surgeons as suspected, 7 proved to have tuberculosis of the udder, and 18 tuberculosis in other notifiable forms.

Of 375 samples of milk taken by the Medical Officer of Health's Department, 20 were referred to the Chief Veterinary Officer as tuberculous, consequent examination of the involved herds resulting in the detection of 13 cases of tuberculosis of the udder and 2 giving tuberculous milk. In the remaining 5 cases, the supplies were proved to be non-tuberculous on the day of the examination of the herd, showing that the diseased animal had been removed or that the contamination had ceased.

A considerable unexplained increase in the number of cases of tuberculous mastitis is to be noted.

A number of cattle were also dealt with under the Tuberculosis Order of 1925 as suffering from reportable forms of the disease other than in the udder, the particulars of which will be found under that section.

The following is a table of the veterinary examination of cows in the city cowsheds, together with the figures for the previous five years for comparison:—

Year.	Visits to cases notified by owners.	Routine and other visits.	Total visits.	Samples of milk from suspected town cows examined microscopically.	Cows Examined.	Cows with tuberculosis of the udder.
1926	48	777	825	70	10,515	20 or 0.19%
1927	59	880	939	95	12,148	19 or 0.15%
1928	54	796	850	68	10,613	25 or 0.23%
1929	55	904	959	66	12,105	25 or 0.21%
1930	34	879	913	123	11,463	20 or 0.17%
1931	52	779	831	131	10,201	35 or 0.34%*

* Allowing for re-examination of the same animals, the actual incidence is approximately 0.87% per annum.

Taking the estimated cattle population of the city at 3,560, the figures for 1931 show that each animal was examined approximately three times during the year. It is desirable that routine examinations of all cows in the city should be conducted at least quarterly.

All the cases of tuberculous mastitis detected were confirmed by the aid of the microscope. The two cases in which cows were found to be giving tuberculous milk without showing clinical change in the udder, were also discovered by microscopical means, the diagnosis being subsequently confirmed by the biological test. It has been found possible to detect tuberculous infection in mixed milk from groups of cows microscopically, and, by elimination, to discover the offending animal. It has yet to be proved whether such an extension of the use of the microscope is ordinarily practicable, though the saving of

infection is obviously desirable. The method is being tested in cases where a bulk sample is referred from the Medical Officer of Health's Department as being tuberculous, and examination of the incriminated herd fails to single out the offending animal. Results up to date are very encouraging.

The supervision of general hygiene and statutory sanitary requirements is conducted by an Inspector of the Department, who reports an improvement.

1,500 routine visits were made, and 36 special visits to supervise disinfection of premises from which diseased cattle had been removed.

Two official notices were served on occupiers of premises requiring them to remedy certain faults or carry out necessary repairs.

MILK PRODUCED OUTSIDE THE CITY.

The detection of infected supplies rests with the Medical Officer of Health, who causes samples from bulk to be taken as the milk comes into the city.

Tuberculous samples are reported to the Medical Officer of the county of origin, whose duty it is to arrange for suitable investigation at the source.

The Chief Veterinary Officer has made a practice of being present at first examinations of suspected herds, but as the work is done by the county officers no complete table of statistics can be shown as was formerly done.

During the year, 31 such visits have been made.

The following table shows the counties and number of farms therein which sent tuberculosis milk into Liverpool and which were examined during the year. In those cases where no cow was detected with a tuberculous udder the contamination had either ceased or the affected cow had been sold for slaughter. Some of the particulars have been kindly furnished by the examining veterinary officers :—

County.	Farms sending in tuberculous milk.	Cattle examined and re-examined.	Contamination eliminated by tuberculous udders detected and destroyed †	Contamina- tion eliminated, but no tuber- culous udder detected.
CHESHIRE	20	1,061	16	8
DENBIGHSHIRE	2	102	2	—
LANCASHIRE	3	139	3	—
SHROPSHIRE	4	178	1	3
FLINTSHIRE	2	147	1	1
TOTALS	31	1,627	23	12

† In some cases more than one animal has been dealt with on a farm.

In certain cases the producers have complained that their supplies have been labelled by contractors. This procedure complicated the tracing of infected samples and permitted a margin of error. Steps have been taken to ensure that the practice will not be continued.

The necessity for some steps being taken to prevent infection of the milk supplies coming into the city from country sources has been emphasised in previous reports. It is very desirable that all milk-producing cattle should be subjected to routine veterinary examination. So far as the Chief Veterinary Officer is aware, this has not been instituted in any of the counties from which Liverpool draws its principal supplies. Routine examination by a whole-time veterinary staff has, however, been introduced in the following counties:—West and North Ridings of Yorkshire, Durham, Cumberland, Surrey, Glamorgan, and many areas in Scotland.

An attempt is being made to induce producing areas to institute routine veterinary examination, and Cheshire has now appointed a whole-time officer.

CORPORATION MILK SUPPLIES.

The Port Sanitary and Hospitals Committee takes approximately 472 gallons of Grade A (Tuberculin Tested) Milk, and 1,041 gallons of ordinary milk per day. The former is used for drinking and the latter for culinary purposes. For Infant Welfare purposes the Health

Committee takes 460 gallons of Grade A (Tuberculin Tested) milk per day. The total annual consumption is therefore about 720,000 gallons, involving an expenditure of over £50,000.

The Hospitals and Institutions non-graded supply was found to be tuberculous on nine occasions and, as a result of examination, ten tuberculous udders were detected. Contamination was eliminated in every case. The Grade A (Tuberculin Tested) supply was reported to be tuberculous on one occasion. Examination of the herd did not reveal the source of the infection and, as all the animals therein had passed the tuberculin test just prior to the taking of the sample certified to be tuberculous, and subsequent control samples were certified to be non-tuberculous, it would appear that the contamination was derived from outside sources.

Owing to one supplier failing to carry out the terms of his contract, five firms, in May, tendered to supply in his place. Twelve farms were therefore inspected (4 in Lancashire, 3 in Denbighshire, 4 in Shropshire, and 1 in Montgomeryshire). Seven were found to be satisfactory, and five unsatisfactory. 448 cows were thus examined.

When contracts were made, in October, each firm tendering submitted the addresses of the farms from which it was intended to draw supplies. Seven firms tendered for the supply of Grade A (T.T.) milk from Lancashire, Cheshire and Shropshire, and eleven farms were inspected and 627 cows examined. Eight premises were found to be satisfactory and three were not then licensed. Seventeen firms tendered for the supply of non-graded milk. The farms were situated in Lancashire, Cheshire, Denbighshire, Shropshire, Westmoreland and Montgomeryshire. In all, 63 farms and 2,378 cows were examined. 51 premises were found to be suitable and 12 unsuitable. Many of the suitable farms have been gradually improved as a result of regular inspection. In this manner a total of 86 farms, containing 3,453 cattle, were examined.

In addition to the examination of the herds and premises of firms tendering, those which supply the successful contractors are visited quarterly. The following table shows the number of farms and cattle so dealt with:—

Milk Supplied to	No. of Farms.	Visits.	Cows examined.
City Hospitals and Institutions ...	46	113*	4,470
Infant Welfare Centres ...	3	12	876

* New premises added in October were only inspected once.

As distinct from the routine quarterly visits, 102 visits have been paid to farms for the purpose of testing 473 animals with tuberculin.

During the year, two veterinary surgeons, who propose taking up municipal work, have been fully instructed in milk and dairy inspection, and in the administration of the Diseases of Animals Acts.

THE TUBERCULOSIS ORDER, 1925.

Under this Order, certain forms of bovine tuberculosis are notifiable by owners and veterinary surgeons.

Its object is to eliminate such tuberculous cattle as are dangerous to the health of human beings or to other cattle by spreading infection. Many cattle are infected with tuberculosis in such a form as not to be an immediate source of infection to others or a direct danger to human health. Such are not included within the Order.

Owners are compensated for cattle which are slaughtered, the scale being three-quarters of the market value for a case which is found on post-mortem to be not advanced, and one-quarter for animals which are found on post-mortem to be advanced within the meaning of the Order. As from 15th October, an Amending Order fixed the minimum compensation for each animal at £1 10s. 0d.

75 per cent. of the above payments in compensation are borne by the Ministry of Agriculture and Fisheries, the remaining 25 per cent. being paid by the Local Authority. The latter amount, however, is, in most cases, counter-balanced by the sum received for salvage. Since the introduction of the Order there has been a credit balance to the City each year.

The following table shows the number of animals dealt with during 1931, and the forms in which they were diseased:—

Total number of animals examined.	Slaughtered.	Tuberculosis of udder.	Giving Tuberculous Milk.	Tuberculous emaciation.	Chronic cough and definite signs of Tuberculosis.
959	55	32	2	9	12

Compensation refunded by Ministry	£210 16 10	Compensation paid to Owners	£293 13 5
Amount of salvage recovered by sale of carcasses...	95 13 6	Credit balance to Local Authority	12 16 11
	<u>£306 10 4</u>		<u>£306 10 4</u>

Total market value of animals slaughtered £642 10s.

The carrying out of the Order involves a considerable amount of time devoted to microscopical diagnosis, post-mortem examinations, and disinfection of premises.

In addition to the requirements of this Order, the Chief Food Inspector notifies the Department whenever a cow from Liverpool premises is found on slaughter to have a tuberculous lesion. The stall is then thoroughly disinfected. During the year 36 visits were paid for this purpose.

EXAMINATION OF MILK FOR TUBERCULOUS INFECTION.

From January to December, 1931, 746 samples of milk from sources outside the city were submitted for bacteriological examination, and 30 of the samples were found to be contaminated by tubercle bacilli, this being equal to 4·0 per cent.

During the same period 375 samples of milk from town cowkeepers were submitted for bacteriological examination, and 21 of the samples were found to be contaminated with tubercle bacilli, this being equal to 5·6 per cent.

The following tables give particulars relating to the samples taken and result of examination:—

TABLE RELATING TO COUNTRY SAMPLES.

Year.	Samples from bulk.			Farms affected.
	No. taken.	Tubercle Baccilli present	Percentage	
1925	482	36	7.46	29
1926	449	34	7.57	36
1927	523	24	4.58	21
1928	488	34	6.96	22
1929	596	26	4.36	23
1930	673	36	5.34	32
1931	*746	30	4.0	29

* 28 of this number were samples of country milk which had been treated by heat in the city, all of which were negative.

TABLE RELATING TO TOWN SAMPLES.

Year.	Samples from bulk.		
	Number taken.	Tubercle baccilli present	Percentage
1925	211	8	3.80
1926	234	13	5.55
1927	253	10	3.95
1928	258	8	3.1
1929	327	13	3.9
1930	332	14	4.2
1931	375	21	5.6

SAMPLES OF MILK SUBMITTED FOR BACTERIOLOGICAL EXAMINATION DURING 1931.

	No. taken.	No. found tubercular.
Samples of town milk	375	21
„ taken at railway stations	177	5
„ „ „ infant welfare centres	36	0
„ „ „ city hospitals	175	5
„ „ „ institutions	104	7
„ „ „ wholesale milk depots	254	13

ADMINISTRATION OF THE FOOD AND DRUGS
(ADULTERATION) ACT, 1928, AND OTHER ACTS, ORDERS
AND REGULATIONS.

A section of the staff supervises the composition and purity of food and drugs under the above Acts and under Regulations issued from time to time by the Ministry of Health.

The object of this supervision is to ensure that food is free from adulteration, is of the nature substance and quality demanded by the purchaser, and contains no chemical or other preservative which is dangerous to health. The latter is controlled by the Public Health (Preservatives in Food) Regulations.

Samples of foods and drugs are purchased in shops in accordance with the routine laid down in the Act, and great care is exercised in procuring these samples.

In practice, a large number of "informal" samples has been taken during the year, i.e., they are taken without any intimation to the vendor that the samples are to be analysed. This practice is valuable as it gives intimation as to sources of fraud, but no action is taken until a sample has been purchased "officially"—this method saves time and trouble, and causes little annoyance to honest shopkeepers.

In order to consolidate the Acts dealing with the adulteration of food and drugs, an Act was passed entitled the Food and Drugs (Adulteration) Act, 1928, which incorporated the main provisions of several Acts dealing with foods, including margarine and butter.

DETAILS OF SAMPLES OF MILK OBTAINED FOR
CHEMICAL ANALYSIS.

	<u>1930.</u>	<u>1931.</u>
Number of samples purchased on week-days in town ...	1,243	1357
„ informations	34	12
„ samples taken at railway stations on week-		
days	424	464
„ informations	0	8
„ samples purchased on Sundays in town ...	226	231
„ informations	8	2
„ samples taken at railway stations on Sundays	41	49
„ informations	0	0
„ samples taken at city hospitals	336	371
„ informations	0	0

	1930	1931.
Number of samples taken at Corporation infant welfare centres and day nurseries	434	422
„ informations	0	0
„ samples taken at other institutions	381	474
„ informations	0	0
„ samples taken at wholesale milk depots	418	596
„ informations	5	6
„ samples taken at wholesale milk depots on Sundays	22	21
„ informations	0	0

FOOD AND DRUGS (ADULTERATION) ACT, 1928.

	1930	1931.
Number of visits to wholesale dealers in margarine	71	94
„ visits to shops	4,193	4,627
„ visits to other places	1,303	1,442

THE PUBLIC HEALTH (PRESERVATIVES, &C., IN FOOD) REGULATIONS.

Number of samples examined during the year for the presence of a preservative :—

Milk	3,985
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Number in which a preservative was reported to be present : Nil.

SPECIAL EXAMINATIONS.

The total number of samples submitted during 1931 for special examination was 29.

POISONS AND PHARMACY ACT, 1908.

The Poisons and Pharmacy Act, 1908, came into operation on the 1st April, 1909.

The object of the act is to regulate the sale of certain poisonous substances and to amend the Pharmacy Acts. It is fully referred to in the annual report for 1909.

The number of licenses issued under this Act during the year 1931 was 24.

SUMMARY OF OFFENCES UNDER THE FOOD AND DRUGS (ADULTERATION) ACT, 1928, FOR THE YEAR 1931.

No. of Infor- mations.	Nature of Sample.	Nature of Offence.	RESULT OF LEGAL PROCEEDINGS.				Costs.
			No. of con- vic- tions.	Withdrawn on payment of costs.	Withdrawn and Dismissed without costs.	Fines.	
17	Milk	Adulterated with water	13	...	4	£ s. d. 13 0 0	£ s. d. 18 18 0
7	"	Deficient in milk fat	6	...	1	9 0 0	6 6 0
4	"	Coloured with Annatto	4	...	...	3 0 0	4 4 0
4	Sweets	Excessive amount of Sulphur di-oxide ...	4	...	...	17 0 0	4 4 0
1	Potted Shrimps ...	Contained 1,300 parts per million of Borates calculated as Boracic Acid	1	...	...	2 0 0	1 1 0
*1	"	Contained 2,400 parts per million of Borates calculated as Boracic Acid ...	1	...	...	10 0 0	2 7 0
1	Vinegar	40 per cent deficient in Acetic Acid ...	...	...	1	...	...
1	"	False warranty for supplying vinegar 40 per cent deficient in Acetic Acid ...	1	...	...	2 0 0	2 2 0
36			30	...	6	£56 0 0	£39 2 0

* Appeal against the conviction was heard at the Quarter Sessions and allowed with costs.

Summary of Samples submitted for analysis from January 1st to December 31st, 1931,
and other statistical details.

INFORMAL SAMPLES.				FORMAL SAMPLES.					
Number taken.	Number genuine.	Adulterated.		Number taken.	Number genuine.	Adulterated.		Number caut'nd.	Infor- mations.
		*Class A.	†Class B.			*Class A.	†Class B.		
—	—	—	—	9	9	—	—	—	—
10	10	—	—	5	5	—	—	—	—
1	1	—	—	153	151	2	—	—	—
48	48	—	—	—	—	—	—	—	—
44	44	—	—	—	—	—	—	—	—
165	165	—	—	578	578	—	—	—	—
15	15	—	—	4	4	—	—	—	—
46	44	—	2	34	33	1	—	—	—
17	17	—	—	41	41	—	—	—	—
71	71	—	—	—	—	—	—	—	—
5	5	—	—	118	118	—	—	—	—
193	187	6	—	20	9	11	—	3	4
				Nature of Sample.					
				Arrowroot.....					
				Baking powder					
				Barley					
				Beer and stout					
				Bread					
				Butter					
				Cake flour and mixtures					
				Cheese					
				Cocoa and mixtures					
				Condensed milk					
				Coffee and mixtures					
				Confectionery					

SUMMARY OF SAMPLES, &c.—Continued.

INFORMAL SAMPLES.				Nature of Sample.	FORMAL SAMPLES.				Number taken.	Number genuine.	Adulterated.		Number caut'nd.	Infor- mations
Number taken.	Number genuine.	*Class A.	†Class B.		*Class A.	†Class B.								
34	30	1	3	Condiments and spices	84	1	1	82	—	—	—	—		
9	9	—	—	Corn flour	12	—	—	12	—	—	—	—		
3	3	—	—	Cream of tartar	12	—	1	11	—	—	—	—		
70	69	1	—	Cream and Tinned Cream	1	—	—	1	—	—	—	—		
30	30	—	—	Custard powder	4	—	—	4	—	—	—	—		
22	22	—	—	Dripping and compound	20	—	—	20	—	—	—	—		
31	31	—	—	Dried fruits	131	—	—	131	—	—	—	—		
99	98	1	—	Drugs	1	—	—	1	—	—	—	—		
7	7	—	—	Egg substitute powder	—	—	—	—	—	—	—	—		
5	5	—	—	Flour.....	99	—	—	99	—	—	—	—		
2	2	—	—	Ground almonds	25	—	—	25	—	—	—	—		
16	16	—	—	Honey	—	—	—	—	—	—	—	—		
94	83	10	1	Jam, jellies and marmalade	1	—	—	1	—	—	—	—		

SUMMARY OF SAMPLES, &c—continued.

INFORMAL SAMPLES.			Nature of Sample.	FORMAL SAMPLES.					Infor- mations.
Number taken.	Number genuine.	Adulterated. *Class A.		Number taken.	Number genuine.	*Class A.	†Class B.	Number caut'nd.	
24	24	—	Lard and compound	88	88	—	—	—	—
39	39	—	Lemon cheese and curd	—	—	—	—	—	—
145	145	—	Margarine.....	11	11	—	—	—	—
1317	1304	13	Milk.....	2668	2551	90	27	24	28
5	5	—	Oatmeal and preparations	50	50	—	—	—	—
23	23	—	Olive Oil	—	—	—	—	—	—
11	10	—	Rice and ground rice	301	260	4	37	2	—
8	8	—	Self-raising flour	175	175	—	—	—	—
4	4	—	Sugar.....	105	105	—	—	—	—
18	18	—	Syrup and treacle	—	—	—	—	—	—
—	—	—	Tapioca	66	66	—	—	—	—
10	10	—	Temperance beverages	5	5	—	—	—	—

SUMMARY OF SAMPLES, &c.—continued.

INFORMAL SAMPLES.				Nature of Sample.	FORMAL SAMPLES.					Number caut'nd.	Infor- mations
Number taken.	Number genuine.	Adulterated.			Number genuine.	Adulterated.		Number taken.			
		*Class A.	†Class B.			*Class A.	†Class B.				
12	12	—	—	Tinned and potted meats	1	—	1	—	—	—	
58	48	6	4	Tinned and potted fish	4	2	2	—	1	2	
46	30	2	14	Tinned fruits	—	—	—	—	2	—	
6	5	1	—	Vinegar	3	1	2	—	—	2	
—	—	—	—	Wines and spirits	18	—	18	—	—	—	
261	253	4	4	Miscellaneous	234	7	227	—	—	—	
3024	2950	45	29		5081	119	4896	66	32	36	

* Included all samples found to be adulterated to a material extent.

† Included trivial or doubtful cases.

TOTAL NUMBER OF SAMPLES TAKEN—8,105.

FERTILISERS AND FEEDING STUFFS ACT, 1926.

On 1st July, 1928, the Fertilisers and Feeding Stuffs Act, 1926, which replaced the old Act of 1906, came into operation.

Under it the City Analyst was appointed official Agricultural Analyst, the Chief Food and Drugs Inspector was appointed Inspector, and the three Food and Drugs Inspectors were appointed official samplers.

A certain remuneration was agreed to in respect of the work done under the Act.

Total number of samples submitted during the years 1926 to 1931 :—

1926	..	...	...	...	...	...	52
1927	...	...	...	...	...	...	45
1928	...	...	...	...	...	...	69
1929	...	...	...	...	...	...	108
1930	...	...	...	...	...	...	113
1931	..	..	...	...	...	...	129

REPORT OF THE CITY BACTERIOLOGIST, 1931.

During the year, 49,048 specimens were examined for the Public Health, Port Sanitary, and Water Departments, as compared with 45,923 specimens for the year 1930.

These specimens may be grouped as follows :—

1. Milk and other foodstuffs.
2. Water.
3. Rats, etc., for possible infection with the bacillus of plague.
4. Material from Infectious Diseases in Man—Diphtheria, Vincent's Angina, Typhoid Fever, Tuberculosis, etc.
5. Venereal Diseases.
6. Material from Animals with suspected infection.
7. Other specimens.

The following samples have been examined :—

MILK AND OTHER FOOD-STUFFS.

(i) Fresh Milks—

City Hospitals and other Institutions	...	152	
Maternity and Child Welfare Institutions	...	82	
Milk Shops, Railway Stations, etc.	...	1,036	
			1,270
(ii) Fresh Cream	...	...	11
(iii) Tinned Milks	...	...	22
(iv) Other Food-stuffs, shell-fish, tinned and potted meat, etc.	...	...	73
			1,376

(i) FRESH MILK—CITY HOSPITALS AND OTHER INSTITUTIONS.—Of the 152 samples examined, 58 shewed no evidence of *B. coli* in 1 c.c., 15 contained *B. enteritidis sporogenes* in 10 c.c.s., and *B. tuberculosis* was found in 9 samples. A bacterial count was done in 150 samples.

MATERNITY AND CHILD WELFARE INSTITUTIONS.—Of the 82 samples examined, 22 shewed no evidence of *B. coli* in 1 c.c., and 1 contained *B. enteritidis sporogenes* in 10 c.c.s. A bacterial count was done in 45 samples.

MILKSHOPS, RAILWAY STATIONS, ETC.—Of the 1,036 samples examined 282 shewed no evidence of *B. coli* in 1 c.c., 111 contained *B. enteritidis sporogenes* in 10 c.c.s., 1 contained Acid-Fast bacilli, and *B. tuberculosis* was found in 60 samples. A bacterial count was done in 542 samples.

Thus, in 1,270 samples in milk, 69 were found to be infected with *B. tuberculosis*. This, at first sight, appears to be a large proportion, but many of the samples were in duplicate or triplicate, and it is impossible to draw any conclusions from these figures as to the percentage of tuberculosis in the milk supply of the City.

(ii) FRESH CREAM.—Of the 11 samples of Fresh Cream examined, none call for any special comment.

(iii) TINNED MILKS.—Of the 22 samples of tinned milk and tinned cream examined, 19 were sterile, and the remainder shewed no organisms of the food-poisoning group.

(iv) OTHER FOOD-STUFFS.—There were 73 samples of other food-stuffs examined, as follows :—

(a) Tinned and Potted Meats, etc.	2
(b) Shell-fish	29
(c) Ice-cream	31
(d) Other Food-stuffs	11

None of these samples call for any special comment.

WATER.

There were 598 samples of water examined, viz. :—

Daily samples	556
Monthly samples—	
Prescot; Vyrnwy	12
,, Rivington	12
George Holt Well	8
John Holmes Well	7
	— 39
Special samples	3
	— 598

The water throughout the year, whether from the wells or from Prescot, was, from a bacteriological standpoint, satisfactory.

RATS, ETC.

During the year, 3,173 rats from warehouses, etc., within the City were examined, and no evidence of the bacillus of Plague was found in any of them.

MATERIAL FROM INFECTIOUS DISEASES IN MAN.

(a) Swabs from suspected cases of Diphtheria—

	Posi- tive.	Doubt- ful.	Nega- tive.	Total.
City Hospitals	2,565	4	19,242	21,811
Maternity and Child Welfare Institutions	6	—	196	202
Private Practitioners, etc.	652	8	3,736	4,396
	<u>3,223</u>	<u>12</u>	<u>23,174</u>	<u>26,409</u>

(b) Swabs from suspected cases of Vincent's Angina:—

City Hospitals	11	23	34
Private Practitioners	31	35	66
Maternity and Child Welfare Institutions	—	—	—
	<u>42</u>	<u>58</u>	<u>100</u>

(c) Blood from suspected cases of Typhoid Fever, Undulant Fever, Dysentery and Food-poisoning:—

City Hospitals	39	1	63	103
Private Practitioners, etc.	11	—	28	39
	<u>50</u>	<u>1</u>	<u>91</u>	<u>142</u>

(d) Urine and Faeces, etc., from suspected cases of Typhoid Fever, Dysentery and Food-poisoning:—

City Hospitals	71	—	234	305
Maternity and Child Welfare Institutions	—	—	1	1
Private Practitioners, etc.	2	1	14	17
	<u>73</u>	<u>1</u>	<u>249</u>	<u>323</u>

(e) Sputa. etc., from suspected cases of Tuberculosis:—

City Hospitals	29	204	233
Maternity and Child Welfare Institutions	7	27	34
Private Practitioners, etc.	278	1,451	1,729
	<u>314</u>	<u>1,682</u>	<u>1,996</u>

(f) ANTHRAX INFECTION:—

31 specimens of tissues, swabs, etc., were examined, chiefly for the City Hospitals and *B. anthracis* was found in 1 case.

(g) VACCINES :—

18 vaccines were prepared from specimens sent chiefly from the City Hospitals.

(h) MISCELLANEOUS :—

1,366 specimens of tissues, secretions, fluids and other specimens were examined, chiefly for the City Hospitals, and Maternity and Child Welfare Institutions.

VENEREAL DISEASES.

The following specimens have been examined from persons known, or suspected to be suffering from Venereal Diseases :—

	Posi- tive.	Doubt- ful.	Nega- tive.	Total.
CLINICS :				
Wassermann reactions	713	201	4,157	5,071
For Gonococci	27	3	418	448
For Spirochaetes	2	1	4	7
	742	205	4,579	5,526
HOSPITALS, PRIVATE PRACTITIONERS, ETC.—				
Wassermann Reactions	679	106	2,983	3,768
For Gonococci	107	16	496	619
For Spirochaetes	—	—	7	7
Still-born Infants	—	2	44	46
For Ophthalmia Neonatorum	16	1	41	58
	802	125	3,571	4,498
GRAND TOTALS	1,544	330	8,150	10,024

As the majority of these specimens were sent from patients suspected to be suffering from venereal disease, or undergoing treatment, several specimens of blood may have been sent from one case at different times, and, therefore, no percentages as to positive and negative results can be obtained from these figures.

None of the Still-born Infants examined shewed positive evidence of Syphilis.

The cases of Ophthalmia Neonatorum shewing positive evidence of Gonococci amounted to over 27%.

MATERIAL FROM ANIMALS WITH SUSPECTED INFECTION.

FOR TUBERCULOUS INFECTION.—Of the 10 specimens of tissues, etc., examined, 3 were tubercular and 7 shewed no evidence of infection.

FOR ANTHRAX INFECTION.—There were 47 samples of shaving brushes, bristles, wool, tissues, etc., examined, and no evidence of Anthrax infection was found in any sample.

Seven specimens of animal faeces were examined for Dysentery, but proved negative.

COMPARATIVE SUMMARY OF EXAMINATIONS FOR 1930 AND 1931.

Descriptions of Specimens.	1930	1931
Milks and other Food-stuffs	1,182	1,376
Waters	592	598
Rats, etc.	7,310	6,530
Material from Infectious Diseases in Man :—		
Swabs for Diphtheria	21,946	26,409
Swabs for Vincent's Angina	86	100
Blood for Typhoid Fever, etc.	173	142
Urine and Faeces for Typhoid Fever, etc.	409	323
Sputa, etc., for Tuberculosis	1,940	1,996
Anthrax Infection	66	31
Vaccines	15	18
Miscellaneous	1,265	1,366
Venereal Diseases	10,804	10,024
Material from Animals with suspected infection :—		
Tissues, etc., for Tuberculous infection	13	10
Hair, Shaving Brushes, etc., for Anthrax infection	115	115
Animal faeces for Dysentery	—	7
Other Specimens	7	3
TOTALS ...	45,923	49,048

HOUSING

HOUSING.

REMOVAL OF INSANITARY PROPERTY.

The following summary indicates the number of houses which have been dealt with from the year 1865 to 1931 inclusive:—

Date	Powers	Approximate number of houses dealt with
1865 to 1904	The Liverpool Sanitary Amendment Act, 1864.	6,300
1905 to 1931	HOUSING ACTS.	
	(a) Unhealthy Areas (25)... ..	3,798
1906	(b) As the result of a circular letter directing the owner's attention to the insanitary condition of the property	1,020
1906 to 1931	(c) Closing Orders	1,951
	(d) Demolition Orders	53

UNHEALTHY AREAS DEALT WITH.

Date of Representation.	Area.	Population.	Houses.	Dwellings erected.
July, 1901	Hornby Street	2,431	534	455
„ 1901	Upper Mann Street	743	176	88
Sept. 1906	Burlington Street	607	144	114
Mar. 1907	Beau Street	532	128	...
„ 1907	Bevington Street	1,154	295	224
„ 1907	Holly Street	563	124	78
„ 1907	Frank Street	627	127	68
„ 1907	Grafton Street	304	70	60
Aug., 1907	Saltney Street	88	68	48
June, 1912	Prince Edwin Street	737	187	60
„ 1912	Rathbone Street	445	128	...
„ 1912	Mason Street	301	107	28
	Carried forward	8,532	2,088	1,223

UNHEALTHY AREAS DEALT WITH—Continued.

Date of Representation.	Area.	Population.	Houses.	Dwellings erected.
	Brought forward ...	8,532	2,088	1,223
June 1912	Saltney Street ...	415	93	48
„ 1912	Blenheim Street ...	230	48	18
„ 1912	Penrhyn Street ...	488	116	26
„ 1912	Gore Street ...	78	76	24
„ 1912	Sparling Street ...	153	33	16
„ 1912	Jordan Street ...	...	...	31
June, 1922	Burlington Street ...	1,407	307	In progress
„ 1922	Hopwood Street ...	343	52	30
Jan., 1923	Great Richmond Street ...	148	35	21
„ 1923	Rankin Street ...	476	96	46
Dec., 1925	Pitt Street ...	92	22	48
Jan., 1928	Queen Anne Street ...	2,876	434	...
Dec., 1929	Gerard Street ...	3,430	398	...
	TOTAL ...	18,668	3,798	1,531

In addition to the above, a large number of insanitary houses have been demolished by owners for the purpose of private improvement.

CLOSING ORDERS.

Proceedings have been taken under Section 19, of the Housing Act, 1930, Closing Orders have been made in respect to 191 houses, and Demolition Orders issued for 53 houses.

The approximate number of insanitary houses existing on the 1st January, 1932 (including added areas) was as follows:—

Number of Courts	...	209
Number of Court Houses	...	1,171
Approximate number of Front Houses contiguous to Court Houses	...	462

QUEEN ANNE STREET UNHEALTHY AREA.

The official representation in respect to this area was made in 1928 involving 434 houses, and a population of 2,876, but, unfortunately, owing to an Appeal against the Order of the Ministry of Health, the official judgment was not given by the House of Lords until 23rd March 1931.

Since this date, 313 houses have been purchased, but none of the houses have been demolished.

GERARD STREET CLEARANCE AREA.

The official representation in respect to this area involving 398 houses and a population of 3,430, was dated 5th December, 1929, and the Order of the Ministry of Health was made on 3rd July, 1931.

None of the houses have been demolished, but 14 houses have been purchased, and the tenants transferred to suitable accommodation.

HOUSING ACT, 1930.

In 1930, the Medical Officer of Health submitted a general statement indicating certain proposals in respect to the removal of insanitary property, including unhealthy areas not finally disposed of, and unhealthy areas in respect to which no proceedings have been taken.

The present position in regard to these areas is as follows :—

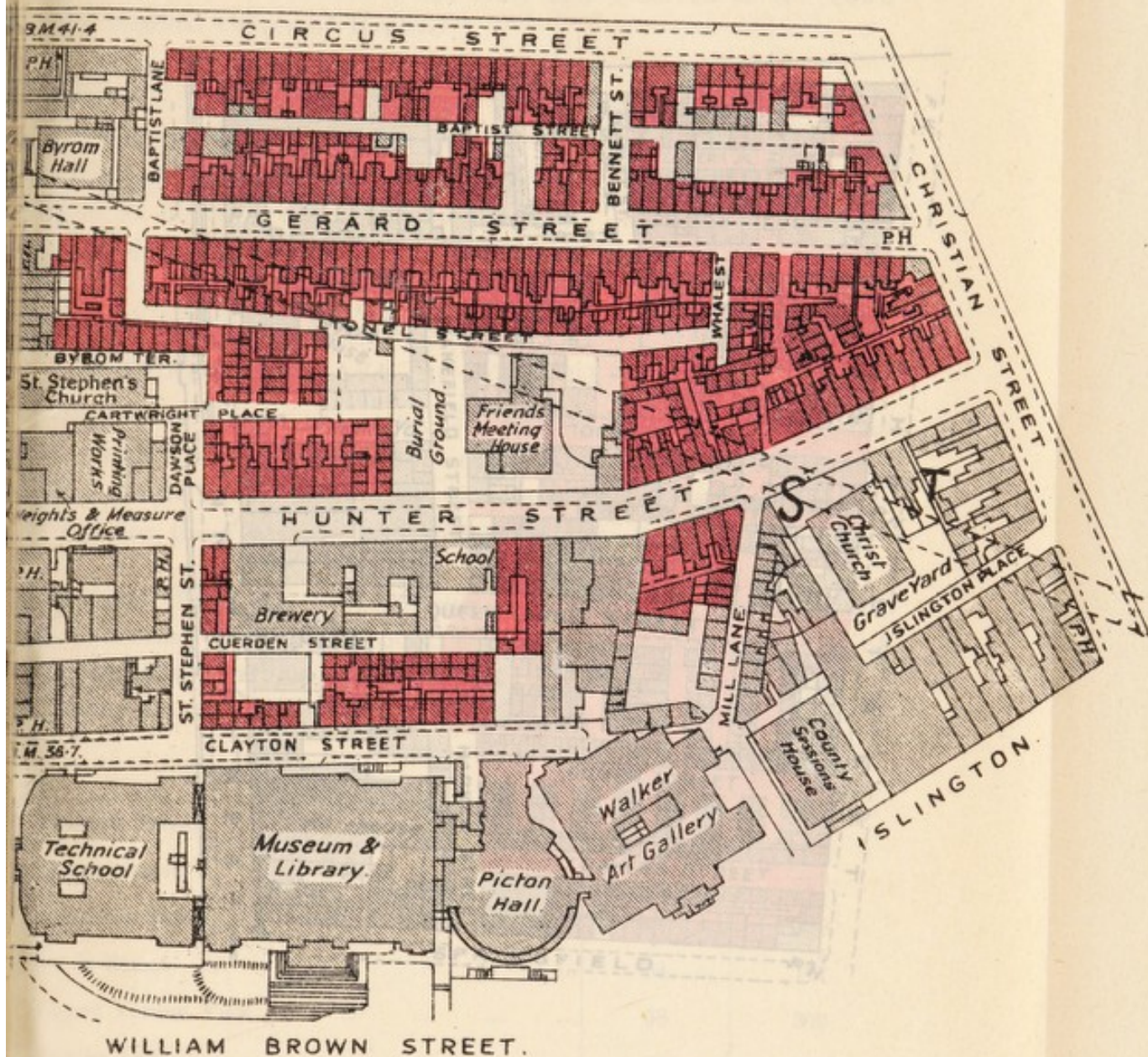
A UNHEALTHY AREAS PREVIOUSLY SCHEDULED BUT NOT FINALLY DISPOSED OF.

1. SALTNEY STREET, DUBLIN STREET and BLenheim STREET.

In July, 1931, a communication was received from the Ministry of Health intimating that it had been held that the service of notice to treat within the statutory period of three years allowed for compulsory purchase, did not constitute acquisition within the meaning of Section 40 (4) of the Housing Act, 1925, consequently, the compulsory powers conferred by the Confirming Order dated 10th October, 1924, must

GERARD STREET CLEARANCE AREAS

HOUSING ACT 1930.



Total number of houses = 398
Total population = 3,430

500

1000

Scale $\frac{1}{2500}$
(Survey 1927)

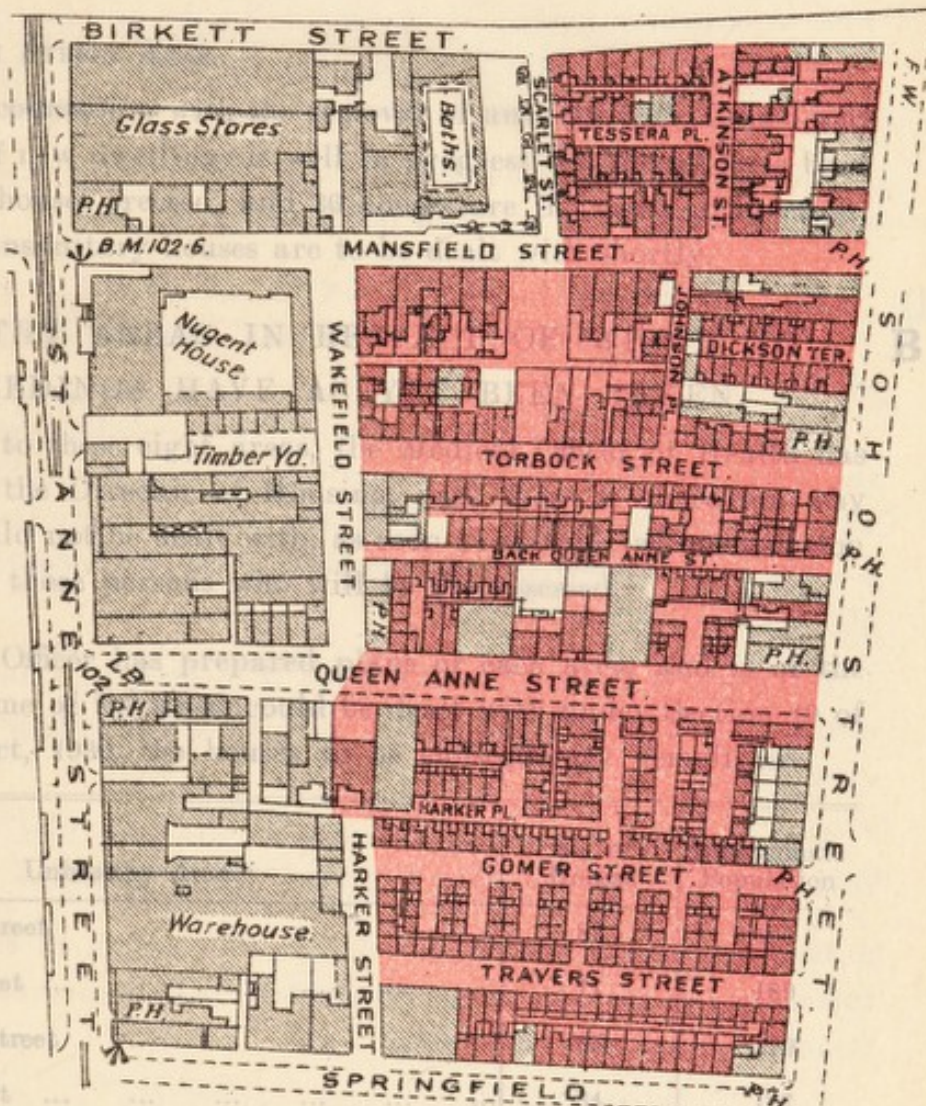
HOUSING ACT 1950.

3430

QUEEN ANNE STREET UNHEALTHY AREA.

HOUSING ACT 1925.

and as having lapsed. The necessary further proceedings in
it to the final disposal of these areas has by resolution of the
Committee dated 23rd July, 1931, been referred to the Town
and Medical Officer of Health.



Total number of Houses = 434
Total population = 2,876.

mortality rates in respect to each of the above areas will be
in the Medical Officer of Health's Report for the year 1920.

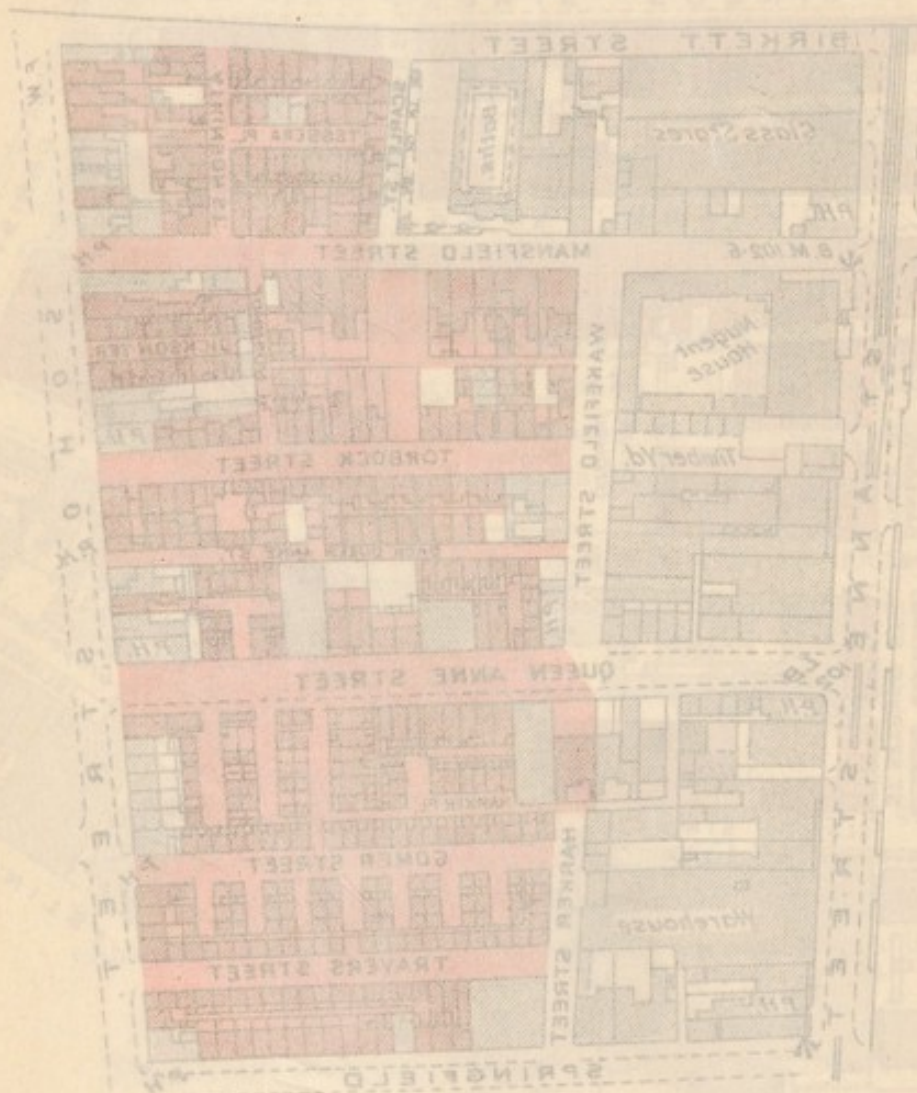
number of houses and population are taken from this Report.

Scale $\frac{1}{2500}$

(Survey 1927).

QUEEN ANNE STREET UNHEALTHY AREA

HOUSING ACT 1925



Total number of Houses = 434
Total population = 2,876

1000

500

Scale 1:2500

(Survey 1927)

regarded as having lapsed. The necessary further proceedings in respect to the final disposal of these areas has by resolution of the Housing Committee dated 23rd July, 1931, been referred to the Town Clerk and Medical Officer of Health.

B. BURLINGTON STREET AREA.

The work in connection with the removal of unhealthy dwellings, and the provision of new dwellings is well in progress, 183 houses have been demolished, 71 houses erected, and 36 houses are in course of erection, the remaining insanitary houses are to be dealt with shortly.

UNHEALTHY AREAS IN RESPECT OF WHICH NO PROCEEDINGS HAVE AS YET BEEN TAKEN.

B

With regard to these eight areas, the Medical Officer of Health has conferred with the Director of Housing, and, there is no reason why these areas should not be dealt with, as soon as suitable accommodation is provided for those persons who will be dispossessed.

The Medical Officer has prepared plans of each area, and is of the opinion that some of the areas could be dealt with under Section 19 of the Housing Act, 1930, the houses to be subsequently demolished.

Unhealthy Area	No. of Houses	Approximate Population
1. Bancroft Street	82	401
2. Comus Street	71	189
3. Lawrence Street	65	329
4. Leeds Street	34	167
5. Mount Vernon View	56	306
6. Roscoe Lane	98	531
7. Slade Street	104	459
8. Whitley Street	118	611
	628	2,993

The mortality rates in respect to each of the above areas will be found in the Medical Officer of Health's Report for the year 1920.

The number of houses and population are taken from this Report.

C. Estimated number of new houses to be allocated by the local authority during the next five years to the purposes of the Housing Act, 1930 (i.e., the purposes mentioned in E and F)	3,000
D. Estimated number of new houses to be allocated by the local authority during the next five years to the purposes of the Act of 1924 (i.e., new housing)	10,000
TOTAL	13,000
E. Estimated number of houses to be demolished during the next five years—	
(i) In clearance areas	628
(ii) In improvement areas—	
(a) For opening area }	900
(b) As unfit houses }	
(iii) Individual houses outside clearance and improvement areas	472
TOTAL	2,000
*F. Estimated number of persons to be displaced during the next five years—	
(i) By any of the processes mentioned in E	10,000
(ii) To abate overcrowding in improvement areas	1,000
TOTAL	11,000
G. Estimated number of houses to be repaired under Part II of the Housing Act, 1930, during the next five years	10,000

* Only a very rough estimate can be given without a house to house inspection.

PROVISION OF DWELLINGS.

The obvious difficulty in the removal of unhealthy dwellings is the vital question of replacing the persons who may be dispossessed. The pivot of all housing operations must be the provision of suitable dwellings before the necessary appropriate action can be taken.

NEW DWELLINGS IN SUBURBS.

In the year 1919 the Housing Committee commenced to erect houses in the suburbs, and up to the present 21,068 houses and 169 flats have been completed, and 1,597 houses are in course of erection.

The following table gives details relating to the districts where these houses have been erected, and the accommodation provided.

		" A "		" B "		Total.
		(Non-parlour)		(Parlour)		
Elms House Estate	...	252	...	—	...	252
Larkhill Estate	...	476	...	1,828	...	2,304
Fazakerley Estate...	...	1,028	...	392	...	1,420
Edge Lane Drive Estate...	...	560	...	311	...	871
Walton-Clubmoor Estate...	...	1,516	...	1,671	...	3,187
Springwood Estate	...	250	...	1,249	...	1,499
Partly developed Estates..	...	—	...	554	...	554
Woolton	...	48	...	—	...	48
Knotty Ash Estate	...	389	...	189	...	578
Highfield Estate	...	—	...	618	...	618
Pinehurst Road Estate	...	287	...	395	...	682
King Street, etc., Garston	...	76	...	—	...	76
Ronald Street	...	78	...	—	...	78
Norris Green Estate	...	4,591	...	2,866	...	7,457
Dovecot Estate	...	831	...	327	...	1,158
Speke Estate	...	286	...	—	...	286
		10,668	...	10,400	...	21,068

All these dwellings are completed and occupied.

At Larkhill and Springwood Estates 120 and 49 flats, respectively, have also been erected.

During the same period (1919-1932), 7,586 houses have been erected by private enterprise, and of these 4,294 were eligible for subsidy under the Housing Acts of 1923 and 1924.

RE-HOUSING IN OLD CITY AREA.

The number of dwellings provided by the Corporation up to the present is 3,836, their situations and dates of opening are as follows :—

Situation	Date opened	Number of tenements (Including houses with shops attached)
St. Martin's Cottages	1869	124
Victoria Square	1885	270
Juvenal Dwellings	1891	101
Arley Street	1897	46
	1902/3	
Gildart's Gardens	1897	229
	1904	
Dryden Street	1901	182
Kempston Street	1902	79
Kew Street	1902/3	114
Adlington Street Area	1902/3	273
Stanhope Cottages	1904	60
Mill Street	1904	55
Hornby Street	1904	454
	1906/7	
Clive Street and Shelley Street	1905	83
Eldon Street	1905	12
Upper Mann Street	1905/6	88
Combermere Street	1909	49
Burlington Street	1910	114
Saltney Street	1911	48
Grafton Street	1911	60
Bevington Street Area	1912	224
Northumberland Street Area	1913	68
St. Anne Street Area	1914	77
Gore Street	1916	24
Jordan Street	1916	31
Sparling Street	1916	16
Penrhyn Street	1921	26
Mason Street	1921	28
Blenheim Street	1923	18
Prince Edwin Street	1924	60
St. Augustine Street	1925	6
Bond Street	1925	24
Pitt Street	1928	48
South Hill Road	1928	198
Melrose Road	1929	260
Rankin Street	1929	46
Hopwood Street	1930	30
Holly Street	1931	34
Burlington Street	1931	71
Great Richmond Street	1931	21
Beloe Street	1931	69
Burnet Street	1932	16
Total	—	3,836

DESCRIPTION OF TENEMENTS.

Number of 1-roomed dwellings	...	...	...	...	196
Number of 2-roomed dwellings	...	...	...	...	1,481
Number of 3-roomed dwellings	...	...	...	...	1,532
Number of 4-roomed dwellings	...	...	...	...	627
					3,836

Number of self-contained dwellings (included in above)					173
Number of lock-up shops	...	...	...	...	27

RENTALS.

The rentals of the tenements vary from 2s. 9d. to 9s. 5d., and those of the self-contained cottages from 9s. 0½d. to 13s. 11½d. per week.

CORPORATION TENEMENTS.

(Old City Area.)

VITAL STATISTICS.

Comparative Tables.

ALL DWELLINGS.

Population, 1926	...	...	...	14,312
Population, 1927	...	...	...	14,437
Population, 1928	...	...	...	14,713
Population, 1929	...	...	...	14,572
Population, 1930	...	...	...	17,407
Population, 1931	...	...	...	17,597

	1926.		1927.		1928.		1929.		1930.		1931.	
	Total number	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.
Births	508	35.49	445	30.82	466	31.67	435	29.85	566	32.51	576	32.73
Deaths	258	17.32	256	17.73	257	17.46	321	22.03	238	13.67	293	16.65
Infantile Mortality	75	147.63	56	125.84	47	100.85	67	154.02	48	84.80	62	107.63
Deaths under 1 year		per 1,000 Births.		per 1,000 Births.		per 1,000 Births.		per 1,000 Births.		per 1,000 Births.		per 1,000 Births.
Phthisis	29	2.02	27	1.87	26	1.76	24	1.65	44	2.52	33	1.87

CORPORATION TENEMENTS.

(Old City Area.)

VITAL STATISTICS.

Comparative Tables.

RESTRICTED DWELLINGS.

Population, 1926	...	...	...	...	12,205
Population, 1927	...	...	...	...	12,337
Population, 1928	...	...	...	...	12,580
Population, 1929	...	...	...	...	12,416
Population, 1930	...	...	...	...	15,317
Population, 1931	...	...	...	...	15,495

	1926.		1927.		1928.		1929.		1930.		1931.	
	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.
Births	432	35.39	380	30.80	378	30.04	363	29.23	491	32.04	475	30.65
Deaths	225	18.43	222	17.99	209	16.61	276	22.23	209	13.63	253	16.32
Infantile Mortality	67	155.09 per 1,000 Births.	49	128.94 per 1,000 Births.	36	95.23 per 1,000 Births.	60	165.29 per 1,000 Births.	46	93.68 per 1,000 Births.	52	109.47 per 1,000 Births.
Deaths under 1 year												
Phthisis	25	2.04	22	1.78	22	1.74	23	1.85	35	2.28	31	2.00

CORPORATION TENEMENTS.
(Old City Area.)

VITAL STATISTICS.

Comparative Tables.

UNRESTRICTED DWELLINGS.

Population, 1926	...	...	...	2,107
Population, 1927	...	...	...	2,100
Population, 1928	...	...	...	2,133
Population, 1929	...	...	...	2,156
Population, 1930	...	...	...	2,090
Population, 1931	...	...	...	2,102

	1926.		1927.		1928.		1929.		1930.		1931.	
	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.	Total number.	Rate per 1,000.
Births	76	36.07	65	30.95	88	41.25	72	33.39	75	35.88	101	48.04
Deaths	33	15.66	34	16.19	48	22.50	45	20.87	29	13.87	40	19.03
Infantile Mortality	8	105.26	7	107.69	11	125.00	7	97.22	2	26.66	10	90.09
Deaths under 1 year		per 1,000		per 1,000		per 1,000		per 1,000		per 1,000		per 1,000
Phthisis	4	1.89	5	2.38	4	1.87	1	0.46	9	4.21	2	0.95

HOUSING ACT, 1930.

SECTION 17.

Statistics for the year ended 31st December, 1931 :—

Number of dwelling-houses inspected	2,283
Number of defects found	12,036
Number of notices issued	1,799

In the majority of cases the work has been carried out by the owners. A reference has been sent to the Town Clerk and Director of Housing, in respect to outstanding notices.

RETURN REQUIRED BY MINISTRY OF HEALTH,

YEAR ENDED 31ST DECEMBER, 1931.

GENERAL STATISTICS.

Area (acres)	24,795
Estimated Population	856,483
Number of inhabited houses	178,000
Number of structurally separate dwellings (1931 Census)	181,851
Rateable value	£6,418,518
Sum represented by a Penny Rate	£23,760

HOUSING.

Number of New Houses erected during the year :—

(a) Total	3,182
(b) With State Assistance under the Housing Acts, 1923 and 1924 :—	
(i) By the Local Authority	1,810
(ii) By other bodies or persons	1,372

HOUSING STATISTICS.

1. INSPECTION OF DWELLING-HOUSES DURING THE YEAR.

(1) (a) Total number of dwelling-houses inspected for housing defects (under Public Health or Housing Acts)	101,453
(b) Number of inspections made for the purpose	166,782

(2) (a) Number of dwelling-houses (included under sub-head (1) above) which were inspected and recorded under the Housing Consolidated Regulations, 1925		101,453
(b) Number of inspections made for the purpose		166,782
(3) Number of dwelling-houses found to be in a state so dangerous or injurious to health as to be unfit for human habitation		1,832
(4) Number of dwelling-houses (exclusive of those referred to under the preceding sub-head) found not to be in all respects reasonably fit for human habitation		Nil.
2 REMEDY OF DEFECTS DURING YEAR WITHOUT SERVICE OF FORMAL NOTICES.		
Number of defective dwelling-houses rendered fit in consequence of informal action by the Local Authority or their officers...		96
3. ACTION UNDER STATUTORY POWERS DURING THE YEAR.		
A.— <i>Proceedings under Sections 17, 18, and 23 of the Housing Act, 1930.</i>		
(1) Number of dwelling-houses in respect of which Notices were served requiring repairs...		1,799
(2) Number of dwelling-houses which were rendered fit after service of formal notices—		
(a) by owners		1,644
(b) by local authority in default of owners		Nil.

B.—*Proceedings under Public Health Acts.*

(1) Number of dwelling-houses in respect of which notices were served requiring defects to be remedied ... 37,450

(2) Number of dwelling-houses in which defects were remedied after service of formal notices:—

(a) By owners ... 37,450

(b) By local authority in default of owners ... Nil.

C.—*Proceedings under Sections 19 and 21 of the Housing Act, 1930.*

(1) Number of dwelling-houses in respect of which Demolition Orders were made ... 53

(2) Number of dwelling-houses demolished in pursuance of Demolition Orders ... Nil.

D.—*Proceedings under Section 20 of the Housing Act, 1930.*

(1) Number of separate tenements or underground rooms in respect of which Closing Orders were made ... Nil.

(2) Number of separate tenements or underground rooms in respect of which Closing Orders were determined, the tenement or room having been rendered fit ... Nil.

E.—*Proceedings under Section 3 of the Housing Act, 1925.*

(1) Number of dwelling-houses in respect of which Notices were served requiring repairs ... Nil.

(2) Number of dwelling-houses which were rendered fit after service of formal notices—

(a) By owners... Nil.

(b) By local authority in default of owners ... Nil.

(3) Number of dwelling-houses in respect of which Closing Orders became operative in pursuance of declarations by owners of intention to close ... Nil.

F.—*Proceedings under Sections 11, 14 and 15 of the Housing Act, 1925.*

(1) Number of dwelling-houses in respect of which Closing Orders were made ... Nil.

(2) Number of dwelling-houses in respect of which Closing Orders were determined, the dwelling-houses having been rendered fit ... Nil.

(3) Number of dwelling-houses in respect of which Demolition Orders were made ... Nil.

(4) Number of dwellinghouses demolished in pursuance of Demolition Orders ... Nil.

HOUSING OF THE WORKING CLASSES.

Number of houses *owned* by the Local Authority distinguishing those built in the last two years and held as under : —

Number of houses owned by the Local Authority... 24,695

„ built in the last two years under :—

1. Part III of the Housing Act, 1925 ... 2,744

2. Part II do. ... 225

3. Other powers ... Nil.

CITY BUILDING SURVEYOR'S DEPARTMENT.

RETURN OF HOUSES ERECTED 1927-1931.

NUMBER OF ROOMS, (Exclusive of Bathrooms, Sculleries, &c.)	1927	1928	1929	1930	1931
4 Rooms or less	1	103	1,161	612	1,547
5 or 6 Rooms	7,115	3,024	1,234	1,622	1,499
7 or 8 Rooms	173	136	183	118	132
9 or 10 Rooms	6	—	3	4	3
More than 10 Rooms	—	1	1	2	1
Totals	7,295	3,264	2,582	2,358	3,182

The numbers of houses which have been erected by or for the Housing Committee, and which form parts of Government-assisted schemes, during the last five years, are :—

1927 = 5,728.

1928 = 2,440.

1929 = 1,411.

1930 = 1,169.

1931 = 1,810 (includes 161 Tenement Dwellings).

RESIDENTIAL FLATS.—During 1931, 21 houses have been altered into 63 self-contained residential flats, giving a nett increase of 42 “houses” not included in the above table.

CITY BUILDING SURVEYOR'S DEPARTMENT.

NUMBER OF HOUSES ERECTED AND TAKEN DOWN DURING THE YEAR
ENDED DECEMBER, 1931.

DISTRICTS.	Number Erected.	Number Taken Down.
Exchange	71	117
Abercromby	—	40
Everton	53	6
Kirkdale... ..	—	—
Edge Hill	—	4
Toxteth	80	21
Walton	104	2
West Derby	1,313	49 *
Wavertree	758	10
Fazakerley	188	—
Woolton... ..	126	1
Norris Green	203	—
Speke	286	—
Totals... ..	3,182	250

* Includes 44 hut-dwellings (originally Army huts) at Knotty Ash Encampment.

Of the 3,182 dwelling-houses erected during 1931, 1,810 were built under the direction of the Housing Committee, these forming parts of Government-assisted schemes, and including 161 Tenement Dwellings.

WELFARE OF THE BLIND

A Special Sub-Committee of the Health Committee, with the addition of eight co-opted members, are responsible for the administration of the Scheme approved by the Council under the Blind Persons Act, 1920. The Scheme has been approved by the Ministry of Health.

During the year ended 31st March, 1932, the total amount expended on the blind was £49,093, summarised as follows:—

By the BLIND PERSONS SUB-COMMITTEE—

Unemployable Grants and other costs	...	...	£41,568
-------------------------------------	-----	-----	---------

EDUCATION COMMITTEE—

Training of Blind Students	...	...	3,825
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EDUCATION COMMITTEE—

Contribution towards cost of maintenance of Blind Children	...	...	1,500
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PUBLIC ASSISTANCE COMMITTEE—

Relief to Blind Persons	...	...	2,200
-------------------------	-----	-----	-------

	...	...	£49,093
--	-----	-----	---------

These amounts are used for the welfare of blind persons in the city in accordance with the requirements of the approved scheme, the amount paid to the National Library for the Blind being calculated on the estimated number of blind persons receiving the benefits of the Library during the year.

All cases for relief under the Blind Persons Act, 1920, must be certified as blind within the meaning of the Act, by an ophthalmic surgeon.

During the year 1931, 279 applicants for the Blind Pension were examined by Ophthalmic Surgeons, and of these 175 were found to be blind within the meaning of the Act, and 104 were not blind.

The causes of blindness as found by examination of the certified cases—all over 50 years of age—were as follows:—

Disease	No.	Per cent.
Cataract	64	36·4
Myopia	26	15·0
Glaucoma	25	14·2
Choroiditis	17	9·5
Optic Atrophy	14	8·0
Corneal Disease	12	7·0
Vascular Disease	6	3·3
Iritis	4	2·2
Unclassified	3	2·0
Accidents	2	1·1
Conjunctival Disease	1	·6
Congenital Disease	1	·6
	175	100·0

With regard to the 64 Cataract cases:—

30 are hopelessly blind as an operation is contra-indicated.

9 are not yet ready for operation.

3 have refused to have an operation done.

22 have been advised to have a cataract removed and the majority of them should regain useful sight.

Of the 17 cases blind as a result of Choroiditis, 10 are due to senile changes and the remaining 7 to Disseminated Choroiditis.

Although only two cases appear to have lost their sight as a result of accidents, 6 other eyes were lost from this cause, but do not appear as the applicants carried on with their remaining eye until that was lost from disease. In addition 13 eyes were lost as a result of accidents among the 104 applicants who were not certified, making a total of 23 eyes out of the 558 examined. Casual accidents accounted for 14 eyes while Industrial accidents destroyed 8.

Of the cases shown one man lost both eyes as a result of the same Industrial accident, while the second man lost one eye from an Industrial accident, the remaining eye being destroyed by sympathetic inflammation.

Trachoma blinded the case shown under Conjunctival Disease.

Although only one case appears under Congenital Disease, three of the cases shown under Vascular Disease had Retinitis Pigmentosa. These three cases could be shown under Congenital causes for they had at the time of birth the potential elements of blindness which developed later. If so classified the percentage of blindness from this cause would be 2.2.

During the twelve months ended December 31st, 1931, 72 people under the age of 50 were examined: 28 were found to be blind and 44 were not. The causes are as follows:—

Disease	No.	Per cent
Optic Atrophy	6	21.3
Myopia	5	18.0
Conjunctival Disease	5	18.0
Corneal Disease	4	14.2
Vascular Disease	3	10.5
Congenital Disease	2	7.1
Iritis	2	7.1
Unclassified	1	3.4
	28	100.0

Ophthalmia Neonatorum blinded both eyes of one of the cases shown under Conjunctival Disease, and Trachoma was responsible for two of the remaining four cases. Three patients who were not certified were suffering from active Trachoma.

Congenital Cataracts account for the two cases shown under Congenital defects, but three other cases could be included under this heading for they lost their sight as a result of Retinitis Pigmentosa. If classified here the loss from Congenital defects becomes 18 per cent.

The following tables give the numbers of persons registered as blind at the end of the year ended 31st March, 1932.

The tables relate to the ages of blind persons resident in Liverpool, the number employed, and the number physically or mentally defective.

TABLE II.

Persons aged 16 years and upwards, Employed or Otherwise.			
Employed	...	...	...
Trained but Unemployed	...	...	...
Under Training	...	...	...
No Training but Trainable	...	...	...
Unemployable	...	...	...
			Total.
			248
			19
			68
			33
			1,306
			830
			1,674

TABLE III.

Blind Persons, Physically or Mentally Defective.

Mentally Defective	...	...	...
Physically Defective	...	...	...
Deaf	...	...	...
Combinations of above Disabilities	...	...	...
			Total.
			66
			63
			98
			23
			250

TABLE I.

Ages of Persons Registered as Blind.			
Age.	Males.	Females.	Total.
0-5 years	...	...	...
5-16 "	...	...	...
16-21 "	...	...	...
21-30 "	...	...	...
30-40 "	...	...	...
40-50 "	...	...	...
50-60 "	...	...	...
60-70 "	...	...	...
70 years upwards	...	...	...
			Total.
			1,717

CARE OF ANIMALS.

The Corporation of Liverpool makes yearly donations to the Royal Society for the Prevention of Cruelty to Animals, Liverpool Branch, and to the Liverpool Dogs' Home on account of the work done by those institutions, and the following brief extracts from their reports are, therefore, of interest.

LIVERPOOL CATS' SHELTERS.

Three depots, namely, 41, Russell Street (Telephone Royal 4174), 90, Smith Street, Kirkdale, 230, Mill Street, Toxteth.

The number of unwanted cats received at the three Liverpool Shelters, every one of which is either brought in or is collected by the Society by express request, remains remarkably uniform year by year, the actual total for 1931 being 30,675. Rather more than one-third of this enormous total consists of animals injured or diseased in one way or another, sometimes to a terrible extent. The collecting van which is maintained for the purpose of bringing such animals from their owners' houses is kept extremely busy, having made well over 10,000 calls during the year. The services of this van, where it is not possible to send an animal to one or other of the Shelters, can be obtained by addressing a postcard to the caretaker at 41, Russell Street, or by telephoning Royal 4174. The Society strongly urges that litters of kittens should not be kept at all unless good homes are absolutely assured but should be promptly sent to one or other of the Shelters. No charge is made for lethallising new born litters.

LIVERPOOL HORSES' REST, BROADGREEN.

The increasing popularity of this branch of the work was again demonstrated in 1931, for no fewer than 124 animals were on the pastures, for shorter or longer periods, during the year. The overwhelming number of "cases" are working animals, most of which are returned to their owners, people in humble circumstances, fit and well for their work. A number of shore donkeys were accommodated during the winter months.

LIVERPOOL ANIMALS' HOSPITAL, LARCH LEA, AND BRANCH 230, MILL STREET.

Approximately 3,000 attendances were recorded at these two places on over 2,000 separate animals, mostly dogs and cats. The propor-

tion of cases cured and relieved is about 87.1 per cent. All these animals are the property of owners who cannot afford to pay veterinary charges. The hospitals are served by qualified veterinary surgeons acting in an honorary capacity.

All the above institutions are conducted by the R.S.P.C.A., Liverpool Branch, 3, Crosshall Street, Liverpool (Tel. Central 645).

LIVERPOOL DOGS' HOME, EDGE LANE.

The total number of animals handled in 1931 was 9,373, of which a large number were restored to their owners or sold to new homes. After careful enquiry the surplus were humanely lethallised, under the provisions of the Dogs' Act, 1906. Special advertisements were issued during the year in order to encourage the owner of a lost animal to enquire at the Home for the dog, and good results followed this step. Anyone who has lost a dog should immediately follow up the matter in this way, if possible by a personal call at the Home in Edge Lane.

Unwanted dogs and litters of puppies, for whom no home is assured, should be sent to the Home, or if this cannot be done one or other of the Home's motor vans will call for such animal on receipt of a request addressed to the keeper, or by telephone, Old Swan 1340.

There is an incinerator at the Home for the cremation of the body of a pet.

APPENDIX A.

CITY OF LIVERPOOL.

VITAL STATISTICS OF WHOLE DISTRICT DURING 1931 AND PREVIOUS YEARS.

YEAR.	Population estimated to Middle of each year.	BIRTHS.			TOTAL DEATHS REGISTERED IN THE DISTRICT.		TRANSFERABLE DEATHS. ‡		NETT DEATHS BELONGING TO THE DISTRICT.			
		Uncorrected Number.	Nett.		Number.	Rate.	of Non-residents registered in the District.	of Residents not registered in the District.	Under 1 year of age.		At all ages.	
			Number.	Rate.					Number.	Rate per 1000 Nett Births.	Number.	Rate.
1	2	3	4	5	6	7	8	9	10	11	12	13
1926.....	835479	19869	19792	23·7	12191	14·6	937	372	2066	104	11626	13·9
1927.....	839223	19175	19020	22·7	12443	14·8	975	406	1781	94	11874	14·1
1928.....	845093	19374	19120	22·6	12009	14·2	998	421	1789	94	11432	13·5
1929.....	848873	19162	18888	22·2	13781	16·2	1048	448	1822	96	13181	15·5
1930.....	852669	19199	18881	22·1	11882	13·5	993	399	1544	82	11288	12·8
1931.....	856483	18973	18626	21·7	13024	15·2	1138	357	1740	93	12243	14·3

NOTE.—The rates have been calculated upon the corrected populations as ascertained by the Census Returns of 1921 and 1931.

NOTES.—This Table is arranged to show the gross births and deaths registered in the district during the calendar year, and the births and deaths properly belonging to it with the corresponding rates. The rates should be calculated per 1,000 of the estimated gross population as stated in Column 2, without the use of the standardising factor for the district given in the Annual Report of the Registrar General. In a district in which large Public Institutions for the sick or infirm seriously affect the Statistics, the rates in Columns 5 and 13 may be calculated on a net population, obtained by deducting from the estimated gross population the average number of inmates not belonging to the district in such institutions.

* In Column 6 are included the whole of the deaths registered during the calendar year as having actually occurred within the district.

In Column 12 is entered the number in Column 6, corrected by subtraction of the number in Column 8 and by addition of the number in Column 9. Deaths in Column 10 are similarly corrected by subtraction of the deaths under 1, included in the number given in Column 8, and by addition of the deaths under 1 included in the number given in Column 9.

‡ "Transferable Deaths" are deaths of persons who, having a fixed or usual residence in England or Wales, die in a district other than that in which they resided. The deaths of persons without fixed or usual residence, *e.g.*, casuals, are not included in Columns 8 or 9, except in certain instances under 3 (b) below. In Column 8 the number of transferable deaths of "non-residents" are deducted, and in Column 9 the number of deaths of "residents" registered outside the district are added in calculating the net death-rate of the district.

The following special cases arise as to Transferable Deaths:—

(1) Persons dying in Institutions for the sick or infirm, such as hospitals, lunatic asylums, workhouses, and nursing homes (but not almshouses) must be regarded as residents of the district in which they had a fixed or usual residence at the time of admission. If the person dying in an Institution had no fixed residence at the time of admission, the death is not transferable. If the patient has been directly transferred from one such institution to another, the death is transferable to the district of residence at the time of admission to the first Institution.

(2) The deaths of infants born and dying within a year of birth in an Institution to which the mother was admitted for her confinement should be referred to the district of fixed or usual residence of the parent.

(3) Deaths from violence are to be referred (a) to the district of residence, under the general rule; (b) if this district is unknown, or the deceased had no fixed abode, to the district where the accident occurred, if known; (c) failing this, to the district where death occurred, if known; and (d) failing this, to the district where the body was found.

Area of District in acres
(land and inland water) 24,795.

Total population at all ages855,539 } At Census
No. of structurally separate dwellings...181,851 } of
1931

VITAL STATISTICS OF LIVERPOOL, 1840-1849.

Year.	Population.	Births.	Deaths.	Marriages.	Divorces.	Adoptions.
1840	280,000	12,000	10,000	1,500	10	50
1841	285,000	12,500	10,500	1,600	15	55
1842	290,000	13,000	11,000	1,700	20	60
1843	295,000	13,500	11,500	1,800	25	65
1844	300,000	14,000	12,000	1,900	30	70
1845	305,000	14,500	12,500	2,000	35	75
1846	310,000	15,000	13,000	2,100	40	80
1847	315,000	15,500	13,500	2,200	45	85
1848	320,000	16,000	14,000	2,300	50	90
1849	325,000	16,500	14,500	2,400	55	95

These figures have been collected from the registers of the City of Liverpool, and are given in the following table. The population of the City of Liverpool in 1840 was 280,000, and in 1849 it was 325,000. The number of births in 1840 was 12,000, and in 1849 it was 16,500. The number of deaths in 1840 was 10,000, and in 1849 it was 14,500. The number of marriages in 1840 was 1,500, and in 1849 it was 2,400. The number of divorces in 1840 was 10, and in 1849 it was 55. The number of adoptions in 1840 was 50, and in 1849 it was 95.

The following table shows the number of births, deaths, marriages, divorces, and adoptions in the City of Liverpool, from 1840 to 1849. The population of the City of Liverpool in 1840 was 280,000, and in 1849 it was 325,000. The number of births in 1840 was 12,000, and in 1849 it was 16,500. The number of deaths in 1840 was 10,000, and in 1849 it was 14,500. The number of marriages in 1840 was 1,500, and in 1849 it was 2,400. The number of divorces in 1840 was 10, and in 1849 it was 55. The number of adoptions in 1840 was 50, and in 1849 it was 95.

The following table shows the number of births, deaths, marriages, divorces, and adoptions in the City of Liverpool, from 1840 to 1849. The population of the City of Liverpool in 1840 was 280,000, and in 1849 it was 325,000. The number of births in 1840 was 12,000, and in 1849 it was 16,500. The number of deaths in 1840 was 10,000, and in 1849 it was 14,500. The number of marriages in 1840 was 1,500, and in 1849 it was 2,400. The number of divorces in 1840 was 10, and in 1849 it was 55. The number of adoptions in 1840 was 50, and in 1849 it was 95.

APPENDIX B.
CITY OF LIVERPOOL.
BIRTH-RATE, DEATH-RATE, AND ANALYSIS OF MORTALITY DURING THE YEAR 1931.

	Rate per 1,000 Total Population.		Annual Death-Rate per 1,000 Population.										Rate per 1,000 Live Births.	Percentage of Total Deaths.			
	Live Births.	Still-births.	All Causes.	Enteric Fever.	Small-pox.	Measles.	Scarlet Fever	Whooping Cough.	Diphtheria.	Influenza.	Violence.	Diarrhoea and Enteritis (under two years).	Total Deaths under one year.	Certified by Registered Medical Practitioners.	Inquest Cases.	Certified by Coroner after P.M. No Inquest.	Uncertified Causes of Death.
England and Wales ...	15.8	0.67	12.3	0.01	0.00	0.08	0.01	0.06	0.07	0.36	0.54	6.0	66	91.18	6.17	1.70	0.95
County Boroughs and Great Towns, including London ...	16.0	0.67	12.3	0.00	0.00	0.10	0.01	0.07	0.08	0.33	0.48	8.4	71	91.43	5.84	2.24	0.49
Smaller Towns (1921 Adjusted Populations, 10,000-50,000) ...	15.6	0.73	11.3	0.00	0.00	0.07	0.01	0.05	0.05	0.36	0.43	4.0	62	92.17	5.49	1.25	1.09
London ...	15.0	0.50	12.4	0.01	0.00	0.03	0.02	0.07	0.06	0.26	0.57	9.7	65	89.52	6.23	4.24	0.01
Liverpool ...	21.7	0.84	14.3	0.01	0.00	0.43	0.01	0.22	0.23	0.40	0.45	14.5	93	93.85	3.81	1.60	0.74

APPENDIX B.
CITY OF LIVERPOOL
BIRTH-RATE, DEATH-RATE, AND AVERAGE OF MORTALITY

Year.	Population.		Birth-rate.		Death-rate.		Average of Mortality.	
	Total.	Per 1,000.	Total.	Per 1,000.	Total.	Per 1,000.	Total.	Per 1,000.
1851	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1852	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1853	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1854	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1855	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1856	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1857	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1858	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1859	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1860	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1861	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1862	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1863	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1864	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1865	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1866	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1867	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1868	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1869	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1870	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1871	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1872	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1873	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1874	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1875	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1876	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1877	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1878	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1879	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1880	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1881	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1882	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1883	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1884	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1885	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1886	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1887	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1888	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1889	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1890	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1891	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1892	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1893	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1894	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1895	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1896	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1897	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1898	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1899	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6
1900	214,000	15.5	12,000	5.6	12,000	5.6	12,000	5.6

APPENDIX C.
CITY OF LIVERPOOL.
Causes of, and ages at, Death during the Year 1931.

Causes of Death.	NET DEATHS AT THE SUBJOINED AGES OF "RESIDENTS" WHETHER OCCURRING WITHIN OR WITHOUT THE DISTRICT.									Total Deaths whether of "Residents" or "non-Residents" in Institutions in the District.
	All ages.	Under 1 year.	1 and under 2 years.	2 and under 5 years.	5 and under 15 years.	15 and under 25 years.	25 and under 45 years.	45 and under 65 years.	65 and upwards.	
All Causes { Certified	12152	1711	623	437	423	557	1337	3026	4038	7051
{ Uncertified	91	29	2	...	1	1	4	17	37	2
1. Typhoid and Paratyphoid Fevers	6	—	—	1	1	—	1	3	—	5
2. Measles	369	103	167	86	13	—	—	—	—	266
3. Scarlet Fever	11	2	2	2	2	2	1	—	—	11
4. Whooping Cough	189	92	54	33	10	—	—	—	—	124
5. Diphtheria	197	12	18	56	104	3	2	—	2	195
6. Influenza	345	13	8	7	5	15	60	109	128	62
7. Encephalitis Lethargica	26	—	—	2	—	4	4	12	4	16
8. Cerebro-spinal Fever	47	19	7	8	4	7	1	1	—	50
9. Tuberculosis of Respiratory System ...	989	2	1	9	21	238	389	282	47	574
0. Other Tuberculous Diseases	164	18	14	41	30	29	18	11	3	136
1. Syphilis	40	5	1	—	—	1	9	19	5	34
2. General Paralysis of the Insane	19	—	—	—	—	1	8	10	—	2
3. Cancer	1128	2	1	1	2	7	110	518	487	682
4. Diabetes	89	—	—	—	5	3	7	35	39	57
5. Cerebral Haemorrhage	431	—	—	2	—	—	12	139	278	182
6. Heart Disease	1621	1	—	3	25	44	164	498	886	699
7. Aneurysm	27	—	—	—	—	—	4	14	9	3
8. Other Circulatory Diseases	711	—	1	—	—	2	14	205	489	408
9. Bronchitis	730	60	14	8	3	4	22	100	459	252
0. Pneumonia (all forms)	1502	405	232	106	50	47	137	295	230	768
1. Other Respiratory Diseases	159	5	3	2	2	5	14	64	64	65
2. Peptic Ulcer	83	1	—	—	1	2	21	40	18	87
3. Diarrhoea, etc.	302	234	37	6	4	—	4	6	11	227
4. Appendicitis	39	—	—	4	5	5	10	8	7	45
5. Cirrhosis of Liver	11	—	—	—	—	—	1	6	4	9
6. Other Diseases of Liver	36	—	—	—	1	—	4	19	12	39
7. Other Digestive Diseases	187	23	10	10	11	4	21	54	54	142
8. Acute and Chronic Nephritis	373	—	1	—	6	9	42	167	148	258
9. Puerperal Sepsis	20	—	—	—	—	5	15	—	—	27
0. Other Puerperal Causes	35	—	—	—	—	8	26	1	—	34
31. Congenital Debility, Premature Birth, Malformations, etc.	650	640	5	4	1	—	—	—	—	317
32. Senility	414	—	—	—	—	—	—	16	398	323
33. Suicide	96	—	—	—	—	13	29	41	13	13
34. Other Violence	290	9	15	20	39	35	53	64	55	186
35. Other Defined Causes	897	94	32	26	78	64	136	243	224	752
36. Causes Ill-defined or unknown.....	10	—	2	—	1	1	2	3	1	3
TOTALS	12243	1740	625	437	424	558	1341	3043	4075	7053

APPENDIX D.

CITY OF LIVERPOOL.

INFANT MORTALITY DURING THE YEAR 1931.

Net Deaths from stated Causes at various Ages under One Year of Age.

CAUSE OF DEATH.							Under 1 Week.	1-2 Weeks.	2-3 Weeks.	3-4 Weeks.	Total under 4 Weeks.	4 Weeks and under 3 Months.	3 Months and under 6 Months.	6 Months and under 9 Months.	9 Months and under 12 Months.	Total Deaths under One Year.
All Causes.	Certified	...	...	...	...	...	392	81	58	42	573	238	307	308	285	1711
	Uncertified	...	...	...	...	...	16	3	2	2	23	3	2	1	—	29
Small-pox							—	—	—	—	—	—	—	—	—	—
Chicken-pox							—	—	—	—	—	—	—	1	—	1
Measles							1	—	—	—	1	2	13	35	52	103
Scarlet Fever							—	—	—	—	—	—	—	—	2	2
Whooping Cough							—	—	1	2	3	7	19	35	28	92
Diphtheria							—	—	—	—	—	—	2	6	4	12
Influenza							—	—	1	—	1	4	3	3	2	13
Erysipelas							—	1	—	—	1	2	1	—	—	4
Tuberculous Meningitis							—	—	—	—	—	—	4	4	3	11
Abdominal Tuberculosis							—	—	—	—	—	—	—	1	—	1
Other Tuberculous Diseases							—	—	—	—	—	—	3	2	3	8
Meningitis							—	—	—	—	—	1	1	4	8	14
Convulsions							11	4	1	1	17	4	1	5	1	28
Laryngitis							—	—	—	—	—	1	—	—	—	1
Bronchitis							—	1	4	6	11	20	8	8	13	60
Pneumonia (all forms)							5	7	7	5	24	70	103	104	104	405
Diarrhoea							1	1	—	—	2	2	6	6	1	17
Enteritis							—	6	2	5	13	47	71	46	40	217
Other Disease Stomach							—	1	—	—	1	4	3	—	1	9
Syphilis							—	—	1	1	2	1	—	1	1	5
Rickets							—	—	—	—	—	—	—	3	—	3
Suffocation							4	—	—	—	4	2	—	—	—	6
Injury at Birth							17	3	—	—	20	—	—	—	—	20
Atelectasis							34	—	—	1	35	2	1	1	—	39
Congenital Malformations							28	14	5	2	49	13	10	1	2	75
Premature Birth							270	39	28	10	347	30	4	—	—	381
Atrophy, Debility and Marasmus...							22	4	5	8	39	18	37	18	4	116
Other Causes							15	3	5	3	26	11	19	25	16	97
							408	84	60	44	596	241	309	309	285	1740

Net Births in the year { Legitimate ... 17,771
Illegitimate ... 855

Net Deaths in the year of { Legitimate Infants 1,582
Illegitimate Infants 158

APPENDIX E.

CITY OF LIVERPOOL.

Notifiable Diseases (other than Tuberculosis) during the Year 1931.

DISEASE.	NUMBER OF CASES NOTIFIED.														Cases admitted to Hospital	TOTAL DEATHS
	At all Ages.	At Ages—Years														
		Under 1-	1-	2-	3-	4-	5-	10-	15-	20-	35-	45-	65 and over			
COX	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Febrile Fever	1407	20	64	77	107	131	609	221	84	83	7	4	—	1213	11	
Cholera	3256	56	130	181	226	254	1352	549	205	248	35	17	3	3079	197	
Typhoid Fever (including Para-typhoid)	37	—	—	1	1	—	4	3	9	9	4	4	2	32	6	
Enteric Fever	54	—	—	—	—	—	—	—	1	44	9	—	—	45	20	
Enteric Pyrexia	156	—	—	—	—	—	—	—	—	126	30	—	—	129	—	
Scarlet Fever	2971	339	384	252	159	122	418	155	158	356	197	325	106	1181	549	
Spinal Fever	57	20	9	4	2	2	5	1	4	8	1	1	—	53	47	
Encephalitis and Polioencephalitis	7	1	2	—	—	—	1	3	—	—	—	—	—	6	4	
Encephalitis Lethargica	35	—	—	—	—	1	2	1	5	9	3	12	2	22	26	
Erythema	12	—	2	1	—	—	—	—	1	6	—	2	—	10	5	
Epidemic Neonatorum	718	718	—	—	—	—	—	—	—	—	—	—	—	43	—	
Epidemic Parotitis	510	13	11	5	3	1	17	14	35	82	69	196	64	272	27	
Epidemic Typhus	98	—	—	—	—	—	—	—	12	46	21	19	—	72	3	
Epidemic Typhus	2	—	—	—	—	—	—	—	—	2	—	—	—	2	—	
Epidemic Typhus	7572	595	1082	940	883	956	2822	225	69	—	—	—	—	948	369	
Epidemic Typhus	1568	47	40	46	36	66	1088	230	10	4	—	1	—	240	1	
TOTALS	18460	1809	1724	1507	1417	1533	6318	1402	593	1023	376	581	177	7347	1265	

* Voluntarily notifiable.

APPENDIX F.
CITY OF LIVERPOOL.

CENSUS, 1931.

Registration District.	Sub-District.	Wards.	Structurally separate dwellings (whether occupied or not).	Males.	Females.	Persons.
453 Liverpool	1 Exchange	Exchange ... North Scotland ... St. Anne's ... South Scotland ... Vauxhall ...	638 3,774 3,201 3,954 1,364	1,498 10,293 10,586 10,261 4,538	1,593 11,087 10,359 11,103 4,093	3,091 21,380 20,945 21,364 8,631
			12,931	37,176	38,235	75,411
453 Liverpool	2 Abercromby	Abercromby ... Castle Street ... Great George ... St. Peter's ...	4,348 89 2,343 924	10,637 173 6,405 3,173	12,787 193 6,582 2,375	23,424 366 12,987 5,548
			7,704	20,388	21,937	42,325
453 Liverpool	3 Toxteth Park South	Brunswick ... Dingle ... Sefton Park West ...	3,528 7,311 3,448	10,684 16,957 5,641	11,343 18,258 7,581	22,027 35,215 13,222
			14,287	33,282	37,182	70,464
453 Liverpool	4 Toxteth Park North	Granby ... Princes Park ... Sefton Park East ...	4,984 4,882 4,727	10,707 9,936 8,405	12,643 11,618 11,473	23,350 21,554 19,878
			14,593	29,048	35,734	64,782
453 Liverpool	5 Edge Hill	Edge Hill ... Kensington ... Low Hill ...	6,557 5,913 5,532	15,017 11,423 12,630	15,996 13,167 13,719	31,013 24,590 26,349
			18,002	39,070	42,882	81,952
453 Liverpool	6 Wavertree	Aigburth ... Allerton ... Childwall ... Garston ... Wavertree ... Wavertree West ...	4,368 2,230 1,598 3,374 7,684 4,684	7,085 4,045 2,379 8,784 14,076 8,911	9,040 5,023 3,609 8,474 16,628 9,958	16,125 9,068 5,988 17,258 30,704 18,869
			23,938	45,280	52,732	98,012
453 Liverpool	7 Woolton	Little Woolton ... Much Woolton ...	324 1,238	548 2,417	921 2,782	1,469 5,199
			1,562	2,965	3,703	6,668
455 West Derby	2 Fazakerley (Part)	Croxteth ... Fazakerley ...	5,427 5,391	12,276 12,521	12,744 13,418	25,020 25,939
			10,818	24,797	26,162	50,959
455 West Derby	3 Walton	Anfield ... Fairfield (Part of) ... Walton ... Warbreck ...	5,681 95 8,412 6,274	11,403 156 17,241 13,286	12,858 293 19,268 14,983	24,261 449 36,509 28,269
			20,462	42,086	47,402	89,488
455 West Derby	5 Kirkdale	Kirkdale ... Sandhills ...	7,897 4,271	19,739 12,075	20,650 11,953	40,389 24,028
			12,168	31,814	32,603	64,417
455 West Derby	6 Everton North West	Netherfield ... St. Domingo ...	5,334 5,636	14,145 13,095	15,114 14,084	29,259 27,179
			10,970	27,240	29,198	56,438
455 West Derby	7 Everton South East	Breckfield ... Everton ...	5,293 6,236	10,428 15,705	11,834 16,900	22,262 32,605
			11,529	26,133	28,734	54,867
455 West Derby	8 West Derby Eastern	Fairfield (Part of) ... Old Swan ... West Derby ...	5,347 8,055 9,485	10,067 16,733 19,579	12,111 18,993 22,273	22,178 35,726 41,852
			22,887	46,379	53,377	99,756
		TOTAL OF LIVERPOOL COUNTY BOROUGH	181,851	405,658	449,881	855,539

APPENDIX G. DEATHS REGISTERED IN THE CITY OF LIVERPOOL DURING THE YEAR 1931

CAUSE OF DEATH	SEX	AGE-BELOW																				PUBLIC INSTITUTIONS										CAUSE OF DEATH
																																City of Liverpool

TABLE 1.—CAUSES OF DEATH BY SEX AND AGE									
CAUSE OF DEATH	SEX					AGE			
	Male	Female	Total	Male	Female	1-4	5-14	15-64	65+
ALL CAUSES	1740	1740	3480	1740	1740	1740	1740	1740	1740
I.—Infective Diseases	1308	1186	2494	1308	1186	1308	1186	1308	1186
II.—General Diseases	681	708	1389	681	708	681	708	681	708
III.—Diseases of the Nervous System	419	380	799	419	380	419	380	419	380
IV.—Diseases of the Circulatory System	1143	1214	2357	1143	1214	1143	1214	1143	1214
V.—Diseases of the Respiratory System	1290	1107	2397	1290	1107	1290	1107	1290	1107
VI.—Diseases of the Digestive System	308	308	616	308	308	308	308	308	308
VII.—Diseases of the Genito-Urinary System	308	308	616	308	308	308	308	308	308
VIII.—The Febrile State	43	43	86	43	43	43	43	43	43
IX.—Diseases of the Skin, etc.	34	34	68	34	34	34	34	34	34
X.—Diseases of the Bones, etc.	30	30	60	30	30	30	30	30	30
XI.—Malignant Diseases	49	33	82	49	33	49	33	49	33
XII.—Diseases of Early Infancy	334	314	648	334	314	334	314	334	314
XIII.—Old Age	177	137	314	177	137	177	137	177	137
XIV.—External Causes	281	123	404	281	123	281	123	281	123
XV.—Unclassified Causes	4	6	10	4	6	4	6	4	6
Class 1.—Enteric Fever	1	3	4	1	3	1	3	1	3
Dysentery	108	108	216	108	108	108	108	108	108
Malaria	9	9	18	9	9	9	9	9	9
Scarlet Fever	98	98	196	98	98	98	98	98	98
Whooping Cough	88	109	197	88	109	88	109	88	109
Diphtheria	144	201	345	144	201	144	201	144	201
Infantile	15	13	28	15	13	15	13	15	13
Erysipelas	2	1	3	2	1	2	1	2	1
Leptospirosis	10	10	20	10	10	10	10	10	10
Leptospiral Endocarditis	28	19	47	28	19	28	19	28	19
Cerebro Spinal Fever	1	1	2	1	1	1	1	1	1
Cholera	3	3	6	3	3	3	3	3	3
Typhoid	401	401	802	401	401	401	401	401	401
Tub. Tuberculosis	87	44	131	87	44	87	44	87	44
Meningitis	19	19	38	19	19	19	19	19	19
Tetanus, etc.	20	20	40	20	20	20	20	20	20
Other Organs	14	14	28	14	14	14	14	14	14
Syphilis	9	9	18	9	9	9	9	9	9
Other Infectious Diseases	1	1	2	1	1	1	1	1	1
Class 2.—Cancer	14	14	28	14	14	14	14	14	14
Buccal Cavity	145	110	255	145	110	145	110	145	110
Intestines, etc.	102	102	204	102	102	102	102	102	102
Genital Organs	107	107	214	107	107	107	107	107	107
Bladder	20	20	40	20	20	20	20	20	20
Uterus	1	1	2	1	1	1	1	1	1
Other	1	1	2	1	1	1	1	1	1
Class 3.—Rheumatic Fever	1	1	2	1	1	1	1	1	1
Other Rheumatic	1	1	2	1	1	1	1	1	1

LIVERPOOL

FAZAKERLEY

B.R.	27.6
D.R.	9.1
I.M.	77
Pop.	9.8

WEST DERBY

B.R.	17.9
D.R.	4.4
I.M.	76
Pop.	34.3

WAVERTREE

WALTON

B.R.	14.6
D.R.	11.4
I.M.	80
Pop.	47.0

B.R.	22.2
D.R.	14.8
I.M.	84
Pop.	31.2

TOXTET

B.R.	22.4
D.R.	15.0
I.M.	89
Pop.	63.0

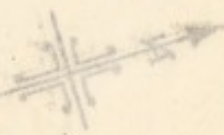
KIRKDALE

B.R.	23.7
D.R.	14.7
I.M.	82
Pop.	93.2

CHANGE

B.R.	22.9
D.R.	20.0
I.M.	117
Pop.	88.0

BOOTLE



LIVERPOOL

FAZAKERLEY

B.R. 27.6
D.R. 9.1
I.M. 77
Pop. 9.8

WEST DERBY

B.R. 17.9
D.R. 11.4
I.M. 76
Pop. 34.3

WOOLTON

B.R. 14.9
D.R. 12.7
I.M. 50
Pop. 3.1

WAVERTREE

B.R. 16.4
D.R. 11.6
I.M. 68
Pop. 16.8

WALTON

B.R. 14.6
D.R. 11.4
I.M. 89
Pop. 47.0

EDGE HILL

B.R. 22.2
D.R. 14.8
I.M. 84
Pop. 121.3

EVERTON

B.R. 23.5
D.R. 17.1
I.M. 113
Pop. 162.6

TOXTETH

B.R. 22.4
D.R. 15.0
I.M. 89
Pop. 63.9

KIRKDALE

B.R. 22.7
D.R. 14.7
I.M. 85
Pop. 92.7

ABERCROMBY

B.R. 23.4
D.R. 18.7
I.M. 133
Pop. 62.0

EXCHANGE

B.R. 32.9
D.R. 20.0
I.M. 117
Pop. 88.0

BOOTLE

1931

POPULATION 856,483

Birth Rate for whole City ... 21.7
Death Rate for whole City ... 14.3
Infantile Death Rate per 1,000 Births ... 93
Population per acre, whole City ... 35.8

Diagram showing Birth Rate (B.R.) per 1,000 of estimated population
Death Rate (D.R.) per 1,000 of estimated population
number of Deaths of Infants under One Year out of every 1,000 born (I.M.)
estimated population per acre, excluding Docks and Quays and including Parks and Open Spaces (Pop.)

In each of the districts of the City during 1931.