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ANNUAL REPORT

OF THE

Medical Officer of Health

(JOHN C. THRESH, M.D., ETC.)

FOR THE

CHELMSFORD

Rural District Council

FOR THE YEAR 1910.

CHELMSFORD:

PRINTED BY JOHN DUTTON, 8, TINDAL STREET.

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CHELMSFORD RURAL DISTRICT.

<i>Medical Officer of Health</i>	...	John C. Thresh, M.D., D.Sc., etc.
<i>Assistant</i>	„	W. H. Hill, M.D., D.P.H.
<i>Engineer and Surveyor</i>	...	James Dewhirst, A.M.I.M.E.
<i>Assistant</i>	„	G. F. Andrassy.
<i>Sanitary Inspector</i>	...	W. Edser (Certificated).
<i>Clerk</i> : A. S. Duffield, Esq., Solicitor.		
<i>Offices</i> : Bank Chambers, Chelmsford.		

GENERAL INFORMATION.

POSITION. Almost in the centre of the County of Essex, and completely surrounding the County Town (the Borough of Chelmsford).

SIZE. The district is an irregular oblong, about 14 miles long (North to South) and 11 miles wide. The area, exclusive of a little inland water, is 82,772 acres.

PHYSICAL AND GENERAL CHARACTERS. The whole area drains into the River Chelmer and its tributaries, and is gently undulating. The entire district is on the London Clay, but this is only exposed in the southern half; elsewhere it is covered with gravel or Boulder clay or both. The highest part is Danbury Hill, which, at the Church, is 366ft. above Ordnance datum. Fortunately, this elevation is capped with water-bearing gravel, the springs from which are utilized for supplying several villages with water. The lowest point is in the Chelmer valley, at the extreme east of the district, where the ground level is only 44ft. above Ordnance datum. The whole district is agricultural, and the only common land is at Danbury, Galleywood and Mill Green (Ingatestone). The area of this waste land is comparatively small.

POPULATION. At the last census this was 23,800, but in 1907 an area with a population estimated at 3,408 was taken from the District and added to the Borough. At the present time the estimated population is as under :—

In the Great Waltham sub-registration

	district	...	7,200 in 10 parishes
„ Chelmsford	„	...	3,520 in 3 „
„ Great Baddow	„	...	5,030 in 5 „
„ Ingatestone	„	...	7,020 in 11 „
Total		...	22,770 in 29 „

SANITARY ADMINISTRATION. The Rural District Council consists of 32 elected members and the Chairman, a co-opted member, G. H. Aubrey, Esq. The Council meets on alternate Tuesdays, after the sitting of the Board of Guardians. There are several committees dealing with Public Health matters, each of which meets once a month, on the Friday preceding a Council Meeting, unless, as occasionally occurs, there is no business to transact. The Committee's reports are presented at the next Council meeting.

LIST OF COMMITTEES.

The Buildings, Works and Sanitary Committee, of which H. G. M. Conybeare, Esq., is chairman, comprises 12 members.

The Danbury and other parishes Waterworks Committees.

The Writtle and Ingatestone Drainage and Water Supply Committee.

The Great Baddow and Springfield 'Drainage and Water Supply Committee.

The Broomfield Drainage and Water Supply Committee.

The Committees meet at the Council Offices, which comprise four rooms—one being used by the Surveyor and Engineer, another by the Sanitary Inspector and a third by the Road Surveyor, whilst the largest room is used for Committee Meetings, Audits, &c.

Printed agenda papers are sent out before each meeting of the Council, and the Minutes of all the Council Meetings are printed and distributed.

URBAN POWERS. The Council has the following Urban Powers :—

Conferred by the L.G.B. April 8th, 1880, under the Public Health Act, 1875.

Section.	Subject.	Parish to which powers apply.
20	... Plans of Sewers	} Great Baddow, Ingatestone and Fryerning, Widford, Great and Little Waltham.
26	... Building over Sewers	
44	... "Cleansing" Bye-laws	The whole district.
45	... Receptacles for rubbish	Writtle.
47 ²⁻³	... Nuisances on premises	Ingatestone & Fryerning.
157 ²⁻³⁻⁴	... Building Bye-laws	... The whole district.
158	... Building Bye-laws, contravention of	" "
169 ²⁻³ , 170	... Slaughterhouses, regulation of	Great Baddow, Boreham, Broomfield, Buttsbury, Danbury, Good Easter, West Hanningfield, Ingatestone and Fryerning, Gt. Leighs, Pleshey, Roxwell, Stock, Great and Little Waltham, Widford, Woodham Ferris, Writtle, and Springfield Rural.

Conferred by order of L.G.B. July, 1887.

42	... Removal of house refuse, etc.	Great Baddow s.d.d., Ingatestone & Fryerning.
----	-----------------------------------	---

Conferred by order of L.G.B. June 3rd, 1892.

- 157¹ ... Bye-laws relating to The whole district.
width of streets.
- 161¹ ... Lighting streets ... Great Baddow, Ingate-
stone and Fryerning,
Writtle. Widford
(1909). ?

Conferred by order of L.G.B. January 18th, 1894.

- 112, 113, 114, Offensive trades, regu- Great Baddow s.d.d.,
115 lation of Broomfield, Ingate-
stone and Fryerning,
Great and Little
Waltham, Writtle.

Conferred February 28th, 1895.

- 197 ... Provision of offices ... For whole district.

Conferred March, 1896.

- 20 ... Map of sewerage Writtle.
system
- 25 ... Building houses with- Great Baddow s.d.d.,
out drains Ingatestone & Fryern-
ing, Widford, Writtle.
- 26¹ ... Building houses over Writtle.
sewers
- 39 ... Providing public } Great Baddow s.d.d.,
necessaries } Broomfield, Stock,
47² ... Stagnant water under } Great and Little
houses } Waltham, Writtle.
- 47³ ... Allowing cesspools, etc., Great Baddow s.d.d.,
to overflow Broomfield, Stock,
Great and Little
Waltham, Writtle,
Ingatestone & Fryern-
ing, Widford.
- 160³ ... Ruinous buildings ... The whole district.

Conferred January 26th, 1900.

- 42 ... Removal of house re- Great Baddow s.d.d.,
fuse, etc. Ingatestone & Fryern-
ing, Great and Little
Waltham (March 8th,
1902), Writtle s.d.d.

Conferred October 12th, 1905.

- 26¹ ... Building houses over Writtle s.d.d.
sewers

Conferred August 23rd, 1907.

- 161¹ ... Street Lighting ... Margaretting.

Adoptive Acts.

- Infectious Diseases (Pre- Came in force April 1st, 1891.
vention Act), 1890.
- Public Health Acts Amend- Came in force April 1st, 1891.
ment Act, 1890 (sec. 23) For whole district.
- Relating to Bye-laws as to (1)
Water closets, (2) structure of
floors and height of rooms, (3)
paving of yards, (4) secondary
means of access for removal of
house refuse.

Great Baddow Special Drainage District formed by Local
Government Board Provisional Order, April 29th, 1876.

Writtle Special Drainage District formed by Local
Government Board Provisional Order, July 9th, 1898.

The Council is represented on the Chelmsford Joint
Sewerage Committee, as the sewage of Widford and Great
Baddow, in the Rural District, and the sewage of Chelmsford
is dealt with on the same farm.

The Council is also represented on the Chelmsford Joint Hospital Committee, which Hospital serves both the Borough and the Rural District.

The Hospital is in Great Baddow, and accommodates 21 patients. It is of a permanent character. There is also a Wood and Iron Hospital for four cases of small-pox at Galleywood. It is at present used for convalescent scarlet fever cases.

Bye-laws and Regulations Adopted.

- | | |
|--|---|
| 1. Relating to the cleansing of footways, removal of house refuse, cleansing cesspools, etc. | Applicable to all the district except Great Baddow, Great and Little Waltham, Broomfield and Writtle. 1894. |
| 2. Relating to Nuisances ... | Whole district, 1894. |
| 3. Relating to New Streets and Buildings. | Apply to whole district. Adopted 1903, an older series being repealed. |
| 4. Relating to Slaughter-houses. | Apply to all districts save a few of smaller parishes. 1894. |
| 5. Relating to Offensive Trades | Apply to Great Baddow s.d.d., Broomfield, Ingatestone and Fryerning, Great and Little Waltham, and Writtle. 1894. |
| 6. Regulations under Dairies and Cowsheds Order. | Apply to whole district. Adopted in 1906 to replace older regulations. |
| 7. Relating to Tents, Vans, and Sheds. | Adopted 1909, and apply to the whole district. |
-

FACTORIES, WORKSHOPS, TRADES, &c. The only factories in the district are a few flour mills. The workshops and trades are all directly or indirectly connected with agriculture.

PUBLIC SCAVENGING. Pail closets are scavenged by contractors in Broomfield, Great and Little Waltham. House refuse is removed by contractors in Great Baddow, Ingatstone and Widford.

SCHOOLS. The medical inspection of school children is undertaken by officials appointed by the County Council.

WORKS OWNED AND CONTROLLED BY THE COUNCIL.

Public Water Supplies.

1. **GREAT BADDOW.**—These works supply Great Baddow s.d.d. and Springfield, in the Borough of Chelmsford. The water is derived in part from springs and in part from a deep well. The water is pumped by means of gas engines into a tank at a sufficient elevation to command the district. From the deep well the water is raised to the ground surface by means of an air-lift pump. The water is soft and of excellent quality. Yield of springs and well 200,000 gallons per day.

2. **INGATESTONE AND FRYERNING.**—These works derive water from the chalk, the well and boring being 800 feet deep. The water is pumped by means of a suction gas plant, deep well pumps, and ram pumps to a reservoir on higher ground. Water soft and excellent. About 270 houses supplied.

3. **DANBURY DISTRICT.**—Water from two springs at the edge of Danbury Common, on southern side of the gravel-capped Danbury Hill. A portion flows into a large covered reservoir, and is then pumped to a tank on a tower at the top of the hill to supply Danbury and Little Baddow. The remainder flows by gravitation, assisted during the day by pumping, to supply Bicnacre, Woodham Ferris and Hull Bridge, Rettendon and Battlesbridge, and Runwell. A part of Sandon is also supplied. There is a balancing reservoir on the top of Rettendon Hill. Water soft and of good quality. Yield of springs about 80,000 gallons per day.

4. **WRITTLE.** These works supply the Writtle special drainage district. The water is derived from the Thanet sands by means of a bored well. An air-lift pump, with oil engines

raises the water to a tank on the ground level. It is then forced through a mechanical filter into a tank upon a birckwork tower, and then by gravitation supplies the village. The maximum demand is under 100,000 gallons per week. The well would probably yield twice this quantity.

5. GREAT WALTHAM.—A spring supply. Water raised by a ram to a small tank on iron columns. Flows thence by gravitation to standpipes in the village.

6. LITTLE WALTHAM.—A spring supply piped direct from small collecting chamber to the village. Houses supplied chiefly from the standpipes.

Sewerage Systems.

1. GREAT BADDOW S.D.D. AND WIDFORD.—The sewers are connected with the Chelmsford mains, and the sewage is dealt with upon a farm of over 100 acres situated in the rural part of Springfield parish. The control of the farm is in the hands of a Joint Sewerage Committee.

2. WRITTLE.—The sewerage system is recent. The sewage is dealt with on coke contact beds and land (about four acres). The process gives satisfactory results.

3. INGATESTONE.—The sewage of this village is dealt with upon 11 acres of land. By constant attention good results are obtained.

4. GREAT WALTHAM VILLAGE.—Each of the two sewers communicates with a small tank and gravel filter. The results appear to be satisfactory.

Report of the Medical Officer of Health

For the Year 1910.

TO THE CHAIRMAN AND MEMBERS OF THE
RURAL DISTRICT COUNCIL.

GENTLEMEN,

I have now the pleasure of submitting to you my 22nd Annual Report on the sanitary circumstances and health of the district.

The arrangement adopted is somewhat different from that of previous reports. Certain information which has to be given annually has been arranged and placed before the report proper. This information is frequently useful for reference, and in towns is usually embodied in what is called The Councillors Annual or Year Book. Certain portions have been given by the Clerk in the Report of the Guardians, but it is more useful embodied here, and it appears to me to be better to give this information separately than to try and include it in the body of the Report.

The most important matters which have been considered during the past year are : (1) The outbreak of Scarlet Fever in Ingatestone ; (2) The proposed sewerage and water supply to Broomfield ; and (3) The Housing of the Working Classes, especially in Ingatestone. These will be referred to in their proper sequence.

There has no doubt been a slight increase in the population during the year, especially in the parishes adjoining the borough. One large factory in the borough is continuously increasing the number of its employees, and as these cannot be

accommodated in the borough, and as rent and rates are lower in the rural district, there is an overflow into the parishes around. The Surveyor informs me that plans for 104 new houses have been passed during the year and all the 78 planned in the previous year have been erected and are occupied. It is probable, therefore, that the population has increased by 407, making an estimated population at the middle of the year of 22,770.

I. HOUSING OF THE WORKING CLASSES.

The Town Planning and Housing Act has received a great deal of attention and is referred to at some length in a special report issued during the year on "The Housing of the Working Classes in Ingatestone." At first one was inclined to think that Sections 15 and 17 of the Act would give the Council greatly increased powers, but apparently the powers are not likely to be of much service just at present. The Council, under existing circumstances, are reluctant to take the responsibility of making closing orders, and the Act affords no assistance in getting remedied defects which are not sufficiently serious to render the houses unfit for habitation. Moreover, the power of appeal to the Local Government Board given to the owners is more disconcerting than an appeal to the Magistrates or Court of Quarter Sessions would be. The procedure for the provision of cottages by the Council has certainly been simplified but this is of little avail if the desire to provide cottages does not exist. More cottages are certainly required in several parishes, but the Council, or most of the members, urge two reasons why they should not provide them. The first is that if the large land and house owners provided sufficient cottages for their labourers there would be no necessity for the Council to build. They object, and naturally object, to subsidise the land by providing cheap cottages for the labourers employed thereon. The second is that it is unfair to saddle any parish or area with rates in order that a few of the inhabitants may enjoy the possession of cottages at a low rental.

The two objections are really closely related. In some parishes the largest land owners possess few, if any, cottages. If they provided cottages for all the persons employed on the farm the demand would be met. If the Rural District Council provides them and a portion of the burden falls on the rates, the landowner is practically receiving a subsidy from the rates.

The only way out of the difficulty, until such time as Parliament lays the burden upon the right shoulders, is for the Council to provide in certain parishes a few cottages with three bedrooms (for these are most urgently required) and to let them at a rent which will repay the loan and interest, cost of repairs, etc. Then no burden would be placed on the rates. Those best able to pay the rents would take the houses and the less commodious houses would become available for the poorer people. This is not a final solution of the problem, but it would certainly help, especially if the cottages could be let at 3s. 6d. to 4s. 6d. per week, and it appears probable that this can be done.

At Ingatestone I found about a dozen cottages which may be considered unfit for habitation. They belong to three different owners. Two of these offered to close their cottages at once if the Council would serve closing orders. This would mean turning about eight families into the street, as there is not a single available cottage in the parish. The owners refuse to make any structural alterations, hence the houses must continue to be inhabited until more cottages are erected.

After the publication of my special report on Ingatestone a local builder offered to erect as many cottages as would be required, not exceeding 50, providing the Council offered certain facilities for drainage and carried the water main to the site. This has been agreed to, and an application is being made to the Local Government Board for power to borrow money to extend the sewers. A plan of the site on which the cottages are to be erected, and shewing the arrangement of the houses, has been submitted to the Council and approved, but no plans for the cottages have yet been presented. I understand that

nothing further will be done until the result of the application for the loan for the sewer extension is known.

Besides the examination of the cottages in Ingatestone, I have specially examined and fully reported upon 1 in Roxwell (since closed), 2 in Great Leighs, 2 in Rettendon, and 5 in Sandon, all of which are, or were, in a state unfit for human habitation. The owners are being pressed to make such alterations as are necessary to render them habitable. In every instance great hardship would be inflicted were the houses closed.

There is no doubt that many improvements can be effected without going to the extreme of serving closing orders. For example, the ground at the backs of many country cottages is very sloppy on account of the absence of any paving. The bye-laws enable the Council to insist upon a reasonable area being paved.

The Housing Committee expressed the wish that from time to time a parish should be reported upon as a whole, but that defective houses in other parishes should also receive attention. The systematic inspection of a parish with say 200 cottages takes up a large amount of time, if all the details of each house are recorded. With one inspector such examinations are practically impossible without other work of importance being neglected. This was my experience whilst Ingatestone was being inspected. The conclusion at which I have arrived is that it is a waste of time to enter up a mass of details regarding houses which a few minutes examination shews to be in a satisfactory condition. In future, only full details will be entered of houses which are more or less insanitary ; in other cases only the information actually required for the investigation, usually the sufficiency of the housing accommodation, will be recorded.

The Council should direct its attention to the points to which I have referred and especially consider whether cottages cannot be erected at a cost which would enable them to be let

at a remunerative rent. If this could be done the rates would not be increased and the district would benefit in many ways.

New houses during erection are very efficiently supervised by the Surveyor and there appears to be no difficulty whatever in getting the bye-laws complied with. No complaint of their stringency has recently been received. On occasions a little relaxation is allowed where circumstances permit.

The following Table has been prepared for me by Mr. Dewhirst, the Surveyor :—

Plans for the following New Buildings have been approved during the year ending 31st December, 1910 :—

Parish.	New dwelling houses.	Other buildings.	Additions to dwelling houses.	Additions to other buildings.	New streets.
Great Baddow ...	9	2	1	—	—
Little „ ...	6	—	—	—	—
Boreham ...	1	1	1	1	—
Broomfield ...	41	1	1	—	—
Buttsbury ...	6	—	—	—	—
Chignall ...	—	—	1	1	—
Danbury ...	5	—	1	—	—
Hanningfield, East...	1	1	—	1	—
„ South...	1	—	3	—	—
„ West ..	—	1	—	—	—
Ingatestone ...	7	2	—	—	—
Margaretting ...	—	1	—	—	—
Pleshey ...	2	—	—	—	—
Rettendon ...	—	1	—	—	—
Runwell ...	5	—	—	—	—
Sandon ...	1	—	—	—	—
Springfield ...	4	1	1	—	—
Stock ...	2	1	—	—	—
Great Waltham ...	3	—	—	—	—
Little „ ...	1	—	—	—	—
Widford ...	—	1	—	—	—
Woodham Ferrers...	3	2	3	—	—
Writtle ...	6	1	—	1	—

Habitation Certificates have been issued in respect of 77 new dwelling houses which have been completed during the year.

II. WATER SUPPLY OF THE DISTRICT.

Public Supplies.

(1) DANBURY DISTRICT. This supply has been well maintained during the year. The samples of water examined were of good quality.

A new water tower has been erected at Danbury. The tank will hold 13,000 gallons as against the 2,800 of the old tank, and the top water level is 393.75 feet above O.D., as against 377.50 of the old tank.

The tank is of steel, 15'-0" in diam. and 12'-0" deep, and is supported by and completely enclosed in a substantial brick tower built wholly in cement mortar on a massive cement concrete foundation, and covered with a tiled roof.

The new tower was brought into operation on the 9th day of November, 1910, and is giving a satisfactory and constant supply of water to the parishes of Danbury and Little Baddow.

(2) GREAT BADDOW. Constant supervision is exercised to prevent the contamination of the valuable spring, and during the year a series of experiments have been conducted to ascertain if any leakage from house drains or sewers could reach the spring. Large quantities of fluorescein and ammonium chloride have been placed in pits dug near the sewers and the liquid washed into the subsoil with large volumes of water. The colouring matter sometimes appeared in unexpected places, but no trace of either chemical or colouring matter ever reached the springs. The tests are not quite completed. Each one takes some weeks, and requires numerous analyses. About 100 samples were examined by chemical analysis in connection with these tests. The borings and pits sunk gave some interesting information. Where

danger was to be apprehended it was found that the strata were disposed in the following order :—

Gravel and loam.

Boulder clay.

Gravel, yielding the spring water.

London clay.

A few yards above the outcrop of the spring the Boulder clay is about 2 ft. thick, and it increases in thickness towards the nearest inhabited houses. There is no doubt that this bed of clay safeguards the spring.

The deep well at these works continues to supply a pure water. During the year there has been no influx of sand, such as occurred from time to time, soon after the well was bored.

(3) **INGATESTONE.** These works are maintained in perfect order. The mains have been extended about 700 yards to supply a dairy farm and several cottages. It has also been decided to extend them towards Fryerning to supply the cottages about to be erected there. The main now extends from the Margaretting Boundary on the North to the Mountnessing Boundary on the South.

(4) **GREAT WALTHAM AND LITTLE WALTHAM.** These small village supplies have not given rise to any complaint either as to quality or quantity.

(5) **WRITTLE.** This supply has been well maintained during the year. The water is not quite bright as it comes from the well, owing to the presence of a little very fine sand and clay. It is filtered through a Bell's mechanical filter, a little sulphate of alumina being previously added if the water is very turbid. The water is raised by an air-lift pump. Notwithstanding the depth from which it is drawn it has occasionally been found to contain large numbers of bacteria. The air inlet to one of the compressors has been altered, and the samples since taken and examined left nothing to be desired.

The reservoirs at Ingatestone, Rettendon, and Great Baddow have all been emptied and cleaned during the year.

None of the public water supplies have any action upon lead. Iron pipe is almost exclusively used for service purposes.

The portions of the district not supplied from mains are almost entirely supplied from shallow wells in the superficial gravel. West Hanningfield being on the London clay, and distant from any water main, is very badly off for water. A little distance from the village there are two springs—one private (?), the other owned by the Council. The latter has a pump with swan-neck delivery pipe, and people for some distance around fetch water from here. Stock is the largest village without a water supply, and one is much needed. No scheme has yet been devised to supply the parish at a reasonable cost. It stands on a hill, and the springs around are comparatively small. A deep well scheme would be very expensive. The Southend Water Co. proposed sinking a well in the parish, and would agree to supply the village on the usual terms. As the Council objected, the Southend Water Co. abandoned this portion of their scheme.

The special report on Ingatestone deals with the water supply to the portions of the parish at a distance from the mains. The description of the sources there given, and the analyses of the water obtained therefrom, may be taken as typical of the remaining parts of the Rural District.

Additional legal power is wanted to cause wells to be properly constructed and maintained, and to secure better protection to springs used for supplying houses with water.

The public wells, etc., at Roxwell and South Hanningfield have been improved to prevent pollution.

The parish of Broomfield requires special mention. It adjoins the Borough of Chelmsford, and is increasing in population with comparative rapidity. It requires both a system of sewers and a water supply, and the Council are anxious to provide both. The parish, however, wishes to have the water supply and to postpone the sewerage scheme. The Council has applied to the Local Government Board for

permission to borrow £850 for experimental works of water supply (boring through the London clay) and £1,525 for the purchase of land for the purpose of sewage disposal. The official inquiry will be held on January 3rd.

The following is a copy of a special report asked for by the Local Government Board and furnished them on November 29th :—

PROPOSED WATER SUPPLY FOR THE PARISH OF BROOMFIELD.

The proposed site for the bored well is near the main road, in the Chelmer valley, about $1\frac{1}{2}$ miles north of Chelmsford Parish Church.

This area is within the London basin and its geology is of the simplest description. In the Chelmer valley the London clay is covered with gravel and alluvium ; beneath the clay in order lie the Woolwich and Reading beds, the Thanet sand and chalk. The lower London tertiaries are well developed and contain a fair amount of water. The chalk is very dense, probably on account of the weight of the superincumbent strata, and it yields very little water, and what it does yield is identical with that in the sands above.

The whole of the subject is somewhat fully dealt with in my book on "The Water Supply of Essex." The number of bored wells in the district is not large, but there are four in the Chelmer valley nearly in a straight line from Broomfield to Great Baddow. To save description, I have prepared a section shewing at each of these points :—

1. The surface level of the ground at the site of the well.
2. The level of the top of the London clay.
3. The level of the bottom of the London clay.
4. The depth of each well.
5. The level of the surface of the chalk where known.

All the levels are reduced to Ordnance datum, and a dotted line has been added showing the rest level of the water in each well.

I have also appended analyses of waters from each of these wells. Other sections and analyses could have been given from my records, but they would serve no useful purpose, the above being ample.

The section shows the valley in the London clay, and also indicates that there must be a somewhat similar valley in the chalk. Every well sunk through this clay has yielded water though never in any great quantity.

The well at Broomfield Hall was sunk in 1908, and the site is only a few hundred yards from the site for the proposed well. It was sunk merely to supply a farm and after boring 22 feet below the bottom of the London clay the yield of the water was so great that it was decided not to go deeper. Two manual pumps could not exhaust the water from the 3in. bore tube.

The Brewery well, near the railway station, has been sunk many years and yields sufficient water, I understand, for a fairly large brewery.

The Moulsham well belongs to the Chelmsford Corporation and the boring is carried well into the chalk. At the trial pumping it yielded 8,000 gallons per hour.

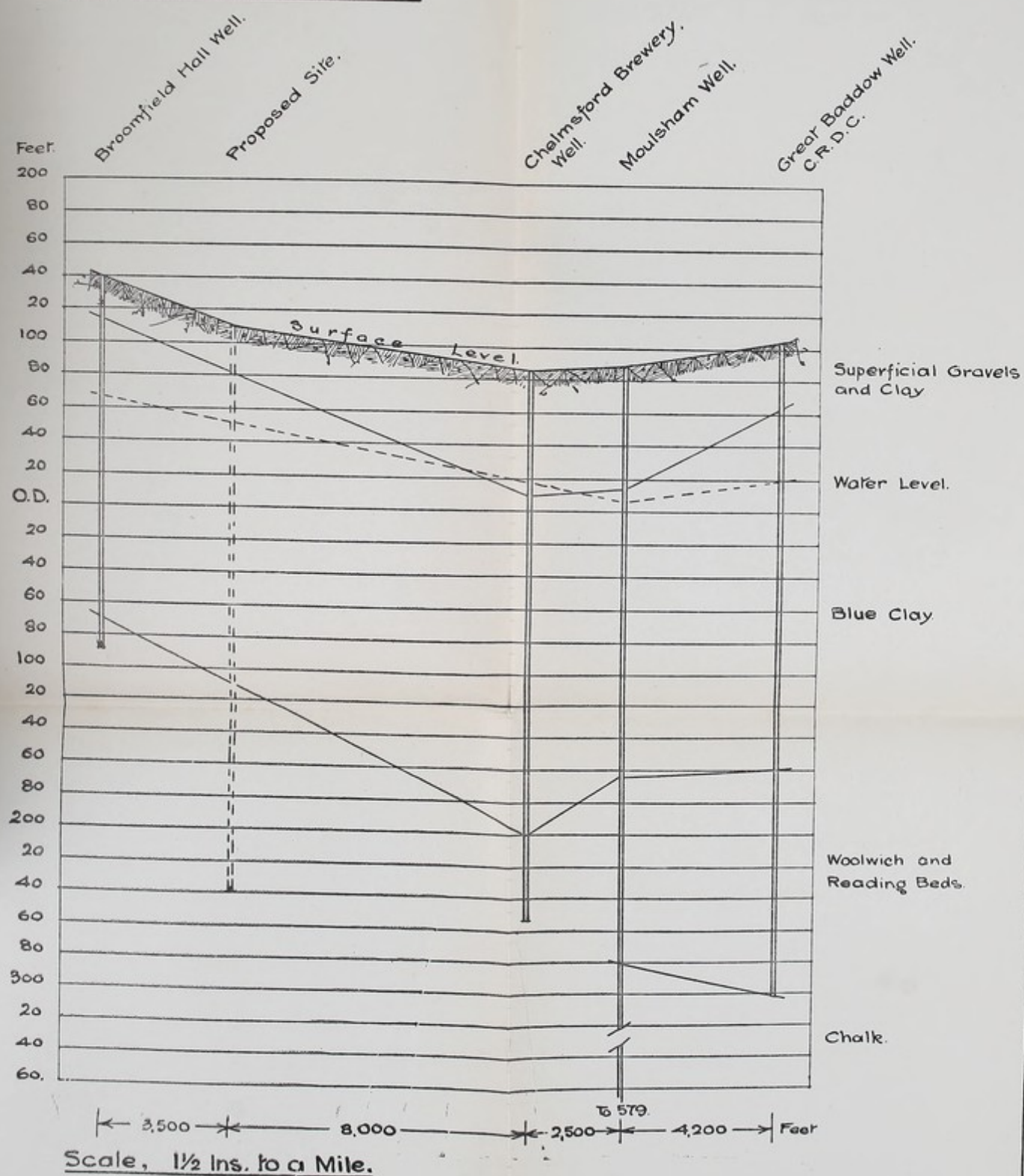
The Great Baddow well belongs to the Chelmsford Rural District Council, and the boring just reaches the chalk. The yield being sufficient, about 4,000 gallons per hour, it was not carried deeper. Experience at a well in the district had shown that there was a risk of diminishing the supply by piercing the flinty layer at the top of the chalk.

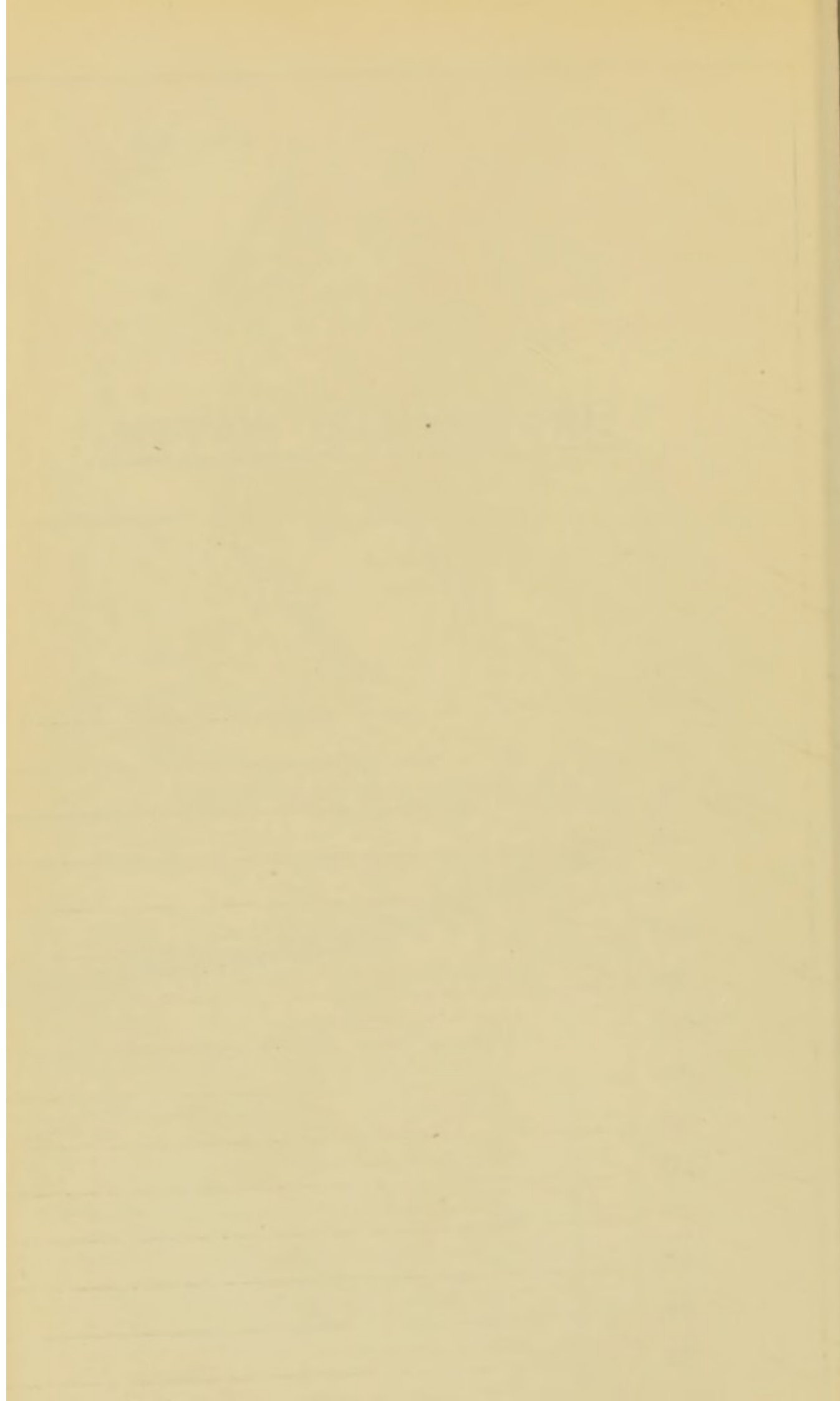
At Broomfield the bottom of the London clay will be reached at a depth of about 80 feet below O.D. and the chalk probably reached about 220 feet below O.D.

Water will certainly be found between these points and all the indications are that 100,000 gallons per day will be obtainable. This will more than suffice for the requirements of the village for years to come.

The water yielded by all these wells is exceedingly soft and rich in certain saline constituents characteristic of the lower tertiaries and chalk in most of the London basin. Experience has proved that it is admirably adapted for all

BROOMFIELD WATER.





domestic purposes. It is scarcely necessary to add that it is of great organic and bacteriological purity. Finally, I may point out that save from a deep well no other source of water is available and the site selected is as good as any other in the parish. Moreover, the well sunk near has definitely proved that there is a good supply of water here and that the quality is unimpeachable.

SECTION OF WELLS.

		Broomfield Hall Well.	Brewery Well.	Moulsham Well.	Gt. Baddow Well.
Ground surface level ...	...	+ 140 ft.	+ 85 ft.	+ 83 ft.	+ 102 ft.
Water rest level ...	...	+ 70 ft.	+ 18 ft.	+ 8 ft.	+ 22 ft.
Section of Wells—					
Sand gravel alluvium ...	...	25 ft.	68 ft.	62 ft.	40 ft.
London clay ...	...	183 ft.	219 ft.	187 ft.	224 ft.
W. and R. Beds and T. sands...	...	...	...	115 ft.	145 ft.
Total depth ...	...	230 ft.	340 ft.	662 ft.	409 ft.

ANALYSES OF WATER.

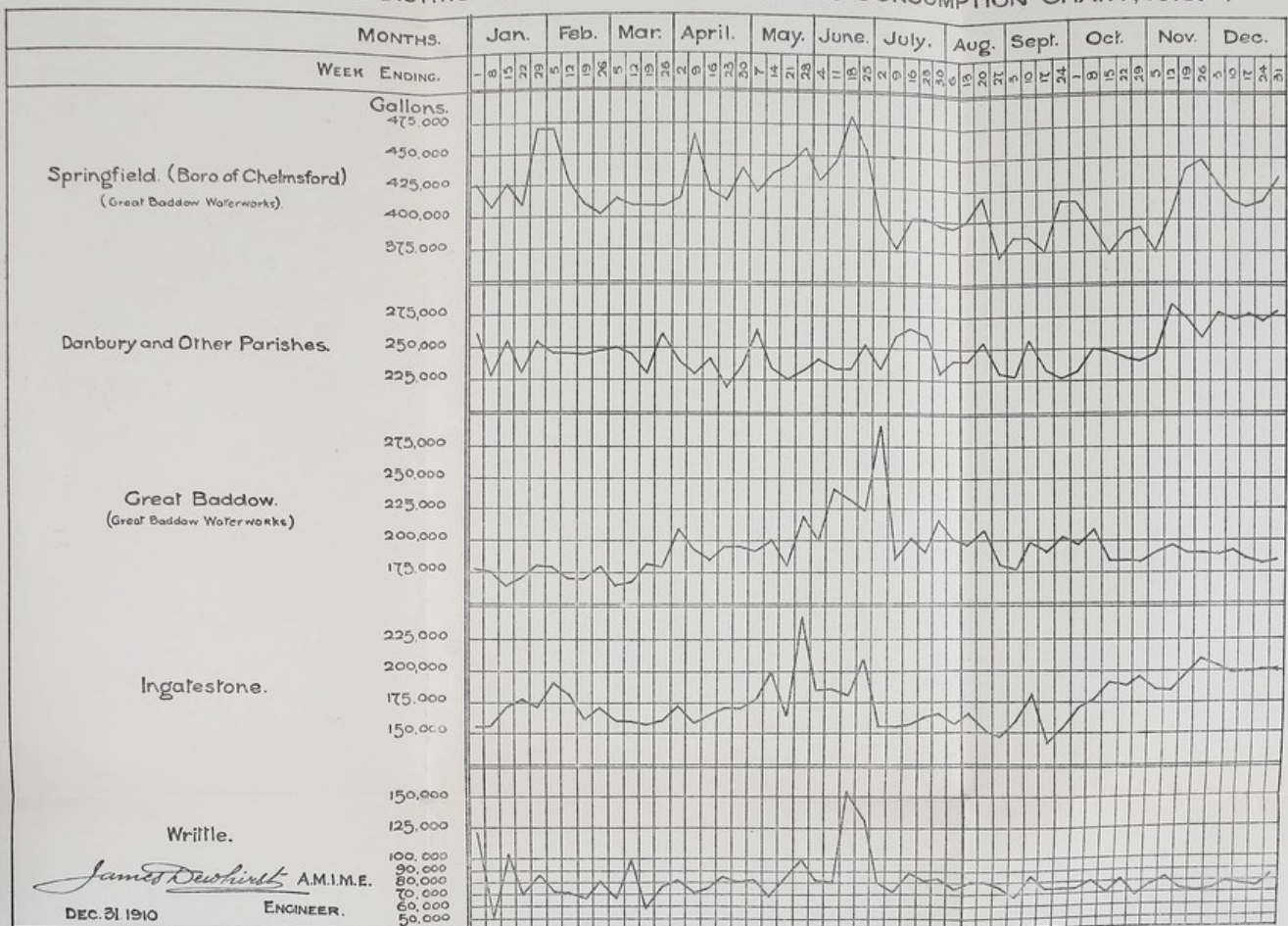
Saline Constituents.		Results in parts per 100,000.			
Calcium carbonate ...	...	2·4	·35	1·75	2·0
Magnesium carbonate ...	...	1·2	·35	1·4	1·1
Sodium carbonate ...	...	40·2	35·85	34·25	33·9
Sodium sulphate ...	...	12·0	13·6	10·05	10·8
Sodium chloride ...	...	32·35	56·6	58·4	62·0
Silica, etc....	...	1·85	·75	·65	1·65
Total solids ...	...	90·0	107·5	106·5	111·5
NOTES		This water was slightly turbid from presence of trace of clayey sand	Clear and bright.	Clear and bright.	Turbid from presence of very fine sand. This well now yields a clear water.

Nov. 29th, 1910.

JOHN C. THRESH.

The water supply to dairy farms continues to give great trouble. Wherever possible, water is laid on from the public mains; but in the majority of cases there is no main near. By arrangement with the owners, the mains have, in some cases, been carried a considerable distance to supply a single farm; in other cases the water is generally obtained from shallow wells, frequently supplemented by pond water. The wells are usually so near the farm yard that the water is more or less polluted. Occasionally a satisfactory water is used for general dairy purposes and a very impure water employed for cooling the milk. This is not a satisfactory arrangement, as the cooler may leak, or the water in leaving the cooler may splash into the churn, and usually the dairy floor gets flooded with this water, as the arrangements for carrying the waste away is generally very primitive. This water problem is a very difficult one, but it is deserving of more attention even than it has hitherto received. The Council's regulations require that every dairy shall have "an adequate supply of good and wholesome water" for cleansing and "for all other reasonable and necessary purposes." Unfortunately, the onus of providing the water rests upon the cowkeeper and not the owner of the farm: hence the difficulty of enforcing a proper supply. In future legislation the Council might be given power to proceed against the owner, if he let the farm for dairy purposes. No doubt there has been some laxity in the past in allowing premises to be used without the water supply being adequate in quantity and sufficiently good in quality. It is often impossible, however, when a well is first sunk, to be certain either of the quantity or character of the water it will ultimately yield. Many wells yield abundantly for a time, then the supply falls off and the yield becomes insufficient; or the quality of the water may be excellent at first, but as more water is used the well draws water from a greater distance, and pollution occurs. When either of these results ensue, the only remedy possessed by the Authority is to proceed against the person registered. Frequently this person is as anxious as

CHELMSFORD RURAL DISTRICT COUNCIL. WATERWORKS CONSUMPTION CHART, 1910.





the Council to obtain a proper supply, but he may be unable to provide it himself, or if he can, he naturally objects to spending a comparatively large sum of money for the betterment of his landlord's property.

Some authoritative statement is desirable as to whether the water supplying the milk cooler should not also be "good and wholesome" in character, so that all danger of milk contamination by polluted water could be avoided.

The appended Table and Chart have been provided for me by Mr. Dewhirst:—

WATER SUPPLY, 1910.

Amount of Water supplied from each of the four principal Waterworks.

Great Baddow Waterworks	...	31,582,000	gallons
Danbury and other Parishes			
Waterworks	...	13,109,700	"
Ingatestone Waterworks	...	9,333,700	"
Writtle Waterworks	...	4,282,400	"
Total	...	58,307,800	"

NEW CONSUMERS.

Great Baddow	...	...	8
Danbury	...	...	3
Little Baddow	...	...	4
Woodham Ferris	...	...	2
Sandon	...	...	3
Ingatestone	...	...	13
Widford	...	...	1
Total	...	...	34

The number of new consumers in the Springfield Ward of the Borough of Chelmsford is not known.

The Chart accompanying shows the consumption week by week in each District.

III. SEWERAGE AND SEWAGE DISPOSAL, Etc.

SEWERAGE AND DRAINAGE. The parishes which are sewered are referred to in the tabulated statement at the beginning of this report. No extension worthy of mention has been made during the year.

The sewage works at Writtle and Ingatestone have been well maintained. In many parishes the drains discharge into field ditches, but only in a few cases do nuisances arise. Far less nuisance is caused by this method of disposal of slop water than by the use of cesspools. The ditches liable to become foul are well known, and receive the Inspector's attention. A committee met at Great Leighs to examine a series of ditches which apparently do not communicate but lie at the back of the straggling group of cottages along the main road. These cottages were all erected upon slips of roadside waste, and the road ditch referred to runs behind. The road is very undulating, and any system of sewerage would be most expensive. The nuisances were very local, and due to carelessness on the part of tenants. Cleansing was secured, and the tenants cautioned about allowing such nuisances to recur.

The sewerage of Woodham Ferris is now passed through a small filter before reaching the outlet ditch.

House drains rarely give rise to trouble, and few defects of a serious character are found. The public sewers are kept well flushed and ventilated, and when necessary they have been examined by means of the water test.

Broomfield requires sewerage, and at Little Waltham the sewage requires some treatment before being allowed to flow into the river. As the County Council has had this source of pollution pointed out to them, the Council should take some immediate steps to properly dispose of the sewage.

A scheme has been elaborated for sewerage Broomfield, and the option of a piece of land upon which to treat the sewage has been acquired. The field has an area of 17 acres. In parts there is 6 feet of dry gravel, but most of the area is a somewhat heavy loam. It has a gentle slope towards the

river, and practically the whole is above flood level. It is a little nearer the road than could be desired, but as the river runs almost parallel with the road it is impossible to get a convenient site any distance away. Between the field and the road is some higher ground, which effectually screens off the whole field. The Local Government Board has been asked to sanction the expenditure of £1,525 for acquiring this field.

It is proposed to dispose of the sewage, when the village is sewered, by broad irrigation. The Royal Commission on Sewage Disposal says that the sedimented sewage of 200 people can be treated on each acre of such land. Assuming that the settling tanks, paths, &c., take up two acres, there will still be 15 acres for irrigation purposes, sufficient for 3,000 people, or double the present population. As the place is increasing in population, I do not regard 17 acres as an excessive area to be acquired.

POLLUTION OF RIVERS. The rivers in this district are all tributaries of the Chelmer. They are comparatively small and very sluggish, and traverse valleys under a high degree of cultivation. Every heavy rainfall therefore washes a good deal of manurial matter into the streams. In dry weather cattle wallow in them: hence the water is always more or less impure. Still this river compares most favourably with all other Essex streams. When the Little Waltham sewage is treated and the Broomfield sewage scheme completed, there will be no appreciable sources of pollution left.

EXCREMENT DISPOSAL. REMOVAL OF HOUSE REFUSE. The parishes scavenged are enumerated in the tabular section. The scavenging of house refuse in Ingatestone and Widford has only been commenced during the year, but the effect is already appreciable. The scavenging is done weekly, and apparently quite satisfactorily, as rarely are any complaints made during our inspections.

Pail closets are in general use where there is no public water supply, and even in the rural parishes where water is available. Some few cess-pit privies remain, but as these

become defective notices are served to convert them into pail closets. A large number of the water closets are hand flushed, but the people keep these in a fairly clean condition. In all new houses, where there is a public water supply and proper sewers, flushing tanks for the w.c.'s are insisted upon.

IV. MILK AND FOOD SUPPLY.

MILK SUPPLY. All the milk used in the district may be said to be produced within the district. There are 116 registered cowkeepers and most of these send their milk to London or to the large urban districts in the south-west of the County, West Ham more especially.

Only one complaint has been received about milk being unsatisfactory. The allegation was that the milk as received in London was "dirty." The dairy from which the milk was sent was visited and found to be one of the best in the district. Moreover the cows were regularly groomed and clean. How the milk delivered in London came to be "dirty" could not be discovered.

Twice during the year milk has been suspected as a cause of disease. The first occasion was at Ingatestone and will be referred to under "Scarlet Fever." The second was at Galleywood, and will be referred to under "Diphtheria." In both cases the cows were examined by a veterinary surgeon and pronounced "healthy," and as suitable precautions were taken the Council did not deem it necessary in either case to prohibit the sale of the milk in the district. It appears to me desirable, however, that cowkeepers should combine together and provide a portable Pasteurizing apparatus, which could be sent to any farm where infection of the milk appears possible, so that the milk could be passed through it before being sent from the farm. I am not certain whether it would not be better if Sanitary Authorities had power to purchase such an apparatus and to insist upon its being used when the Medical Officers thought such a course necessary in the interest of the public. A charge might be made for the loan of the machine,

There is a continuous improvement in the condition of the cowsheds and dairies, and especially in the larger ones. Each year I observe that some cowkeepers have commenced to groom their cows, and the time has come when power should be given to cause every cow yielding milk for sale to be properly groomed. The Council's regulations refer to the cleansing of the udder before milking, and this is done by the cowkeepers who groom their cows, but in other cases it is either not done at all or done in a very perfunctory manner. I have watched the process and on some occasions have concluded that the dirty towel applied more filth than it removed. The smaller cowkeepers are most at fault but some of these are now finding that the demand for their milk depends upon their reputation for cleanliness. Unfortunately, in most of our parishes the people are only too glad to be able to obtain milk, to be very particular about the cleanliness of the source from which it is derived.

Next to the water difficulty, already referred to, the worst insanitary condition arises from the accumulation of manure against the walls of the cowsheds. Sometimes the cows have to wallow through a lot of filth to gain access to the cowsheds. Power is required to compel this manurial matter to be properly stored or placed at a proper distance from the sheds.

The present Regulations appear to be satisfactory and it is useless making them more stringent at present. As above indicated, further powers are required, and until these are obtained the consideration of any alterations in the Regulations can be deferred. The Inspector gives a good deal of attention to cowsheds, and I have inspected many during the year, on occasions making a round, taking all *en route*, at other times visiting those which the Inspector had especially brought to my notice.

There is no systematic veterinary inspection, but I am empowered to take Mr. Lewis, M.R.C.V.S., with me whenever I think any good purpose will be served. The Veterinary

Inspector of the London County Council has paid two visits to the district during the year, both recently. One cow was suspected to be suffering from tuberculosis of the udder and another from tuberculosis of the lungs. Samples of milk were taken from both, but nothing further has been heard with reference to either. I understand that the cows at the farms of one large Dairy Co. are tested with tuberculin, but I have not heard of the test being applied elsewhere.

UN SOUND FOOD. No such food has been seized. There is a suspicion that unsound animals are slaughtered at two slaughterhouses and these are frequently visited. The carcass of an animal, which had suffered from some disease rendering it unfit for the food of man, was found in a slaughterhouse. The cow had been fetched from a farm and slaughtered for the sake of the hide(?). This, I believe, is not an uncommon occurrence. The butcher said the flesh was being sent to the kennels. The Clerk was consulted about seizing it, but would not take the responsibility of recommending this course being pursued. He gave the opinion :—

1. That it was not a legal offence to have a diseased animal in a slaughterhouse,
2. Nor an offence to have the carcass of a diseased animal in a slaughterhouse,
3. That if diseased or unfit for the food of man there should be some evidence that it was intended for the food of man, otherwise
4. If seized, the owner might claim damages from the Council.

The Council thought that there should be specially licensed slaughterhouses in the county to which farmers could send ailing or injured animals for slaughter, and where the carcasses could be inspected and passed for use for human food if not unwholesome. The slaughter of such animals in ordinary slaughterhouses is not desirable. If a butcher were under legal obligation to notify to the Sanitary Authority the slaughter of

any such animals, and to retain the carcass and internal organs until examined, there would be less risk of unsound food being sold for human consumption.

The Sale of Food and Drugs Act is administered by the County Council, and I suspect that very few samples are taken in the parishes distant from a railway station.

V. SYSTEMATIC INSPECTIONS.

NUISANCES. Very few complaints are received; nearly all the nuisances discovered are found during the systematic inspection. One or two parishes are inspected and reported upon every month. Dairies, slaughterhouses, bakehouses, and all premises under the control of the Sanitary Authority are visited, but the cottages of the labourers receive special attention. The detection of nuisances is a comparatively simple matter; securing their prompt abatement is far more difficult. However, the Sanitary Committee and the Council now support their officers better, and less difficulty is experienced than formerly. Owners know that if the notices served are not complied with further action will follow, and this knowledge renders such action rarely necessary.

The Inspector has a thorough knowledge of every portion of the district and takes a pride in his work. He devotes his whole time to sanitary work and then finds the time is not sufficient. With such a large area to cover, and all the office work to do himself it is surprising how much he gets through in a year. If he could get over the ground more quickly (with a small motor car) and had a boy in the office much of his valuable time could be saved for additional inspecting work and with great advantage to the district. It is a wiser policy to pay for the prevention of disease than to pay for maintenance of patients in the hospital, or to pay for the maintenance of the poor, pauperised by illness, in the workhouses. No money yields a better or more immediate return than that spent in preventing those conditions which lead to ill health with its often appalling consequences. The poor may benefit most, but

the sanitary condition of no one class can be improved without also, to some extent, benefitting all other classes.

At present there are neither any offensive trades nor any common lodginghouses in the district. I only know of two houses which can be said to be "let in lodgings," and these can be supervised without the aid of bye-laws.

SCHOOLS. These are systematically visited to see that the sanitary arrangements are kept in good order. The water supply of many has been improved, but there are great difficulties in a few cases in obtaining a satisfactory supply,

Whenever a parish is visited a call is made at the Schools to enquire if there are any suspected cases of infectious illness. Each head teacher has a book of forms for notifying such cases. These have been in use for some years and the teachers generally promptly notify. Cases of sore-throat receive especial attention and during the year many throats have been examined bacteriologically for the bacillus of Diphtheria. *Vide* Diphtheria.

VI. METHOD OF DEALING WITH INFECTIOUS DISEASES.

Every case notified is promptly visited and every effort made to discover the source of infection. Special forms are kept and one filled in for each case. This prevents any point of importance being overlooked. The name, age and occupation of every person living in the house is recorded, and advice about continuing work given. When an epidemic threatens, suitable handbills, always kept in stock, are widely distributed. If it is desirable that the patient should go to the hospital, he is promptly removed. A telephonic message to the Matron or Medical Officer generally assures the ambulance being on its way to the patient's house in a few minutes. The clothing and bedding are also removed and submitted to steam disinfection. The rooms occupied by the patient are disinfected by means of sulphur or by formalin spray, as I may direct, and instructions (printed) left about the further cleansing operations necessary. The fumigation, etc., is done by the Inspector. The Hospital

Official is responsible for removing and disinfecting the bedding, etc.

The hospital belongs to the Joint Board and serves the Chelmsford Urban and Rural Districts. It is just outside the borough in the rural area. There are 21 beds in 2 ward blocks, and the Small-pox hospital at Galleywood is utilized for convalescent cases. Twice during the year the hospital has been overtaxed and it might be worth the consideration of the Board whether, instead of utilizing a tent, another small ward-block, even of wood and iron, might not, with advantage, be erected for use in emergencies. Or a few shelters of the "Lyster" type might be acquired, since cases of infectious disease do very well in such shelters. Circumstances this year have been unusual, and it may be years before the hospital is again overtaxed.

After discharge from the hospital no return case of Scarlet Fever or of Diphtheria has occurred. By the courtesy of the Medical Officer, every case of Scarlet Fever from the rural district is seen by me or my assistant, in consultation with him, and is not discharged unless both agree that it is safe to do so. Diphtheria convalescents are examined bacteriologically and not discharged until the throat and nose are found free from infection. Patients who have been in the hospital always speak in the highest terms of all the officials, and the children always return home looking the better for their sojourn there.

TUBERCULOSIS. Save Poor-law cases, no others are notified, although medical men have been asked to notify voluntarily. In this rural district, I am not certain that much benefit would accrue from notification. I find the medical attendants do everything that is possible for their patients, and all take a great interest in this disease. "Shelters" abound in the district, especially in Great Baddow area, and the type used, constructed entirely of canvas on a wooden frame, is now widely known as "Dr. Lyster's." Various kinds of open-air shelters have been largely used for a long period, but Dr. Lyster has popularised them by shewing how they can be

utilized even by the very poor if a few square yards of ground is available, near the house, upon which one can be erected. At Little Baddow a series of six or seven of these shelters attached to a small farmhouse constitutes the "Boyd Memorial Home" for Consumptives, and at Sandon there are two private sanatoria on the same principle, one carried on by Dr. Marrett and the other by Dr. Lyster.

At the Workhouse four shelters are provided for eight patients, but I understand there are only two patients in at present.

Recently a County meeting was held in the Borough of Chelmsford, at which the Lord Lieutenant of the County, the Right Hon. the Earl of Warwick, presided, when it was decided that the County should institute a memorial to the late King by forming an Association for combatting Tuberculosis on the lines advocated by Dr. Lyster.

The Association will, no doubt, assist in providing Shelters, and in establishing Sanatoria, and will undertake an organized crusade against everything which tends to spread the disease.

The district, including the Borough, is scarcely large enough to justify the establishment of a special Dispensary, but the Joint Hospital Board possesses sufficient land for the erection of a small Administrative Block and a few shelters. I hope, however, that the County movement will result in the establishment of a small Sanatorium within the district, organized on such a basis as not to be dependent upon subscribers for its maintenance. The institution would serve for the Chelmsford Union or possibly for a larger area, and should be supported by the various Poor Law and Sanitary Authorities within the area, and by the payments received from patients.

VII. INCIDENCE OF INFECTIOUS DISEASE.

Some seven or eight years ago it was not unusual to have over 200 cases of infectious disease notified in one year. In 1908 only 56 were notified, and in 1909 only 47. That such

a small number of cases should occur amongst a population exceeding 22,000 was almost phenomenal, and so satisfactory a state of things could scarcely be expected to continue. An outbreak of Scarlet Fever at Ingatestone prevented this high standard being attained this year, but had it not been for this we should probably have improved on all previous records, since of the 117 cases notified during 1910, no less than 72 were in Ingatestone, or directly referable to infection in that parish.

The great general decline has been due to the lessened prevalence of diphtheria. In the past more cases of this disease were annually notified than of all others put together, but in recent years comparatively few cases have occurred. For some reason the infection still lingers around Writtle, but with continued watchfulness I hope that it will soon be eradicated.

Table VI. in the appendix gives the number of cases of each disease notified in each year since 1899.

The parishes in which the cases notified during 1910 occurred, etc., are given in the subjoined Table. No cases occurred in any parish not mentioned.

DIPHTHERIA.

This disease has occurred in seven parishes, but half the total number of cases were in Writtle. In no other parish has there been any outbreak, but the cases which were notified from Great Baddow will require mentioning.

The Writtle outbreak occurred in November and December, and affected school children only. There was no doubt that there was infection amongst the scholars. The children were examined and absentees visited, and a number of swabs taken and examined. No "carrier" was discovered. Another examination was therefore made and special attention paid to the noses, and as a result the nasal discharge of one boy who had been in continuous attendance at school was found to contain diphtheria bacilli. As the Christmas holiday was approaching, I decided to recommend the Schools to be

closed, as it was fairly certain that some other children would have been infected and would shew symptoms of the disease during the ensuing week or ten days. Such proved to be the case.

DISTRIBUTION OF INFECTIOUS DISEASES NOTIFIED DURING
THE YEAR 1910.

	Diphtheria.	Scarlet Fever.	Typhoid and Allied Fevers	Erysipelas.	Totals.
<i>Ingatestone Sub-District—</i>					
Ingatestone and Fryerning ...	2	65	0	0	67
Margaratting ...	0	3	0	0	3
Stock and Buttsbury ...	0	4	0	0	4
East Hanningfield ...	2	0	0	0	2
Rettendon ...	0	0	0	1	1
Woodham Ferris... ..	1	0	0	0	1
<i>Chelmsford Sub-District—</i>					
Roxwell	0	2	0	0	2
Writtle	12	7	0	0	19
<i>Great Waltham Sub-District—</i>					
Little Waltham	0	1	0	0	1
Great Leighs	2	1	0	0	3
Broomfield	0	2	0	0	2
<i>Great Baddow Sub-District—</i>					
Great Baddow	4	2	1	0	7
Little Baddow	1	0	0	0	1
Sandon	0	0	0	1	1
Springfield	0	3	0	0	3
Totals	24	90	1	2	117
Number removed to Hospital	13	71	0	0	84
Number not removed	11	19	1	2	33

The first case at Writtle was notified on Nov. 10th ; on the 25th four children in one family were notified, only two of whom were old enough to attend school. One of them had been ailing a week and had probably infected the others. On the 28th another child was notified. She lived in another part of the parish. On the 29th the boy with nasal diphtheria was discovered, and it was found that he had had a nasal discharge

or over a month, although he had never been ill. Three other children were notified on Dec. 2nd, 6th, and 9th respectively, since when no case has occurred, except one imported from Chelmsford. Amongst the school cases one suffered from nasal diphtheria only, two others had nasal infection following that of the throat.

This interesting little outbreak indicates the necessity for a careful examination of noses as well as throats when school children are affected. The last case in Writtle was that of a servant who was in service in Chelmsford. She was found to be suffering from diphtheria and her mistress promptly telegraphed for her mother and then sent both home in a cab. This is not an unusual way of introducing infection from towns into rural districts.

Three of the four cases which occurred in Great Baddow were probably due to infected milk. Several cases of Diphtheria having occurred in the borough, and most of the families obtaining milk from one dairy, the Borough Medical Officer of Health made enquiries and found that the dairy obtained milk from three farms, one of which was in the borough and two in the rural district. He then took samples of the milk for bacteriological examination and the results being negative he communicated with me. I at once visited the two farms and at one found a case of Diphtheria which was not receiving medical attention and which consequently had not been notified. This lad is said to have been ailing for a few days only, and the other members of the family appeared healthy and were said not to have had sore-throats. Swabs were taken from all, but only the obviously affected child shewed the presence of Diphtheria bacilli. Assuming the history to be correct this case could not account for the cases in the borough nor for the two in Great Baddow which occurred amongst the users of this milk, as they were attacked prior to the child being taken ill. As it was possible that the cows were at fault I obtained the services of Mr. Lewis, M.R.C.V.S., and we

examined the herd of six cows. Mr. Lewis gave the following report :—

“ Dec. 30th, 1910. On the udders of two cows there are sores in the process of healing by scab. These are apparently benign and similar to others frequently found on the udders of healthy cows. A recently calved heifer has cracked teats caused by the calf. With these exceptions the cows appear to be in good health.”

I examined the scabs from a sore on each of the two affected animals, but found no indications of their being diphtheritic. The scabs were few in number, two on one udder and four or five on the other, were circular in outline and varied from $\frac{1}{4}$ to $\frac{3}{4}$ in. in diameter.

Every family known to be supplied directly from the farm was visited and enquiries made. At the 17 houses there had been a case of Diphtheria in one, a fortnight previously, and in five others there had been cases of sore-throat. Swabs were taken from each of these five, but the examination gave negative results, and the throats in all cases were practically normal. The sore-throats had occurred about the time when the Diphtheria case was notified, had lasted but a few days and had always been regarded as due to colds. However, no case of sore-throat was heard of amongst neighbours obtaining milk from another farm. I strongly suspect that the milk had been in some way infected a few weeks previously, but I obtained no evidence which justified me in recommending the Council to order the supply of milk in the district to be stopped. The Chairman being of the same opinion, I merely caused handbills to be distributed dealing with the prevention of Diphtheria, and having the paragraph referring to the boiling of milk distinctly marked. At the same time I persuaded the farmer to allow his child to be removed to the hospital and had the house disinfected. No other case of Diphtheria or of sore-throat, possibly attributable to the milk, has since come to my knowledge, although strict enquiries have been made.

Diphtheria antitoxin is provided for use where the infected family is too poor to pay. It may be used both for curative and prophylactic purposes.

SCARLET FEVER.

There is nothing of interest to record regarding these cases, since the outbreak at Ingatestone was fully dealt with in a special report. No further information has been forthcoming to explain the curious distribution in time or locality.

The Scarlet Fever cases at Writtle occurred at distant intervals and in various parts of the parish. The three cases at Springfield were all in one house, and a fourth has since occurred, notwithstanding the prompt removal of each case as notified by telephone. In connection with two cases notified from Stock, Dr. Cardin, who notified them, made an interesting observation, tending to throw light upon the origin of these sporadic cases. Further enquiry is necessary to ascertain whether the reason is generally applicable or not. There is something mysterious about the way in which these odd cases crop up, since prolonged investigation by skilled observers fails to discover any connection between them and any pre-existing case.

TYPHOID FEVER.

Only one case was notified during the year. The patient had been an invalid for some time before he developed symptoms of this disease. He resided at a dairy farm. Every precaution was taken to prevent the spread of infection, the origin of which could not be traced. The water supply was of the highest bacteriological purity, though not good chemically. This is a very unusual condition. When examined previously it had been found good from the chemical point of view. I examined the well and found that below a certain point near the rest water level the brick work was entirely concealed by a dense plexus of rootlets which extended to the bottom of the well. As the public water main ran near, the owner was persuaded to lay on the public supply for the use of the house and dairy.

PHTHISIS.

Only 11 Poor-law cases have been notified, and of these 10 were patients sent from West Ham to Dr. Lyster's Sanatorium at Sandon. The odd case was that of a man aged 32, in an advanced stage. There was no family history of tubercle. The precautions advised by his medical attendant were being followed, and there was nothing more which could be done. He has a bedroom to himself. The cottage contains his wife and three children also.

As previously stated, "shelters" are largely used in this district. (*Vide* also pages 42—46.)

CEREBRO-SPINAL FEVER.

On August 31st Dr. Lyster reported to me the death of a child which had exhibited typical symptoms of this disease. I met him at the house of the child's parents the same evening and obtained the following history:—

"The family resided in an isolated cottage. There were three young children, and during the previous week all had been feverish. Each had a 'cooling powder' administered, which made them sick, and they were kept in bed two days. By the end of that period all were apparently well. Two days later the child aged 4 complained of headache and of being tired. He was no better on the second day, and on the third day he became 'giddy' and had to clutch at articles of furniture to prevent falling. Towards night he could not bear being touched, and at 8 p.m. the doctor was sent for. He sent some medicine and called early the following day. The patient screamed so much, and appeared in such agony, that no careful examination was possible. The head was continually retracted and the facial muscles so drawn that the features were barely recognizable. Towards midnight he became comatose, and he died about 2 a.m."

Upon enquiry at the houses near it was found that many children had suffered from diarrhoea, and some had been sick and obviously "feverish." All had recovered but one child, concerning which the following information was given by the mother :—

"He was taken ill suddenly on August 12th, complaining of diarrhoea, sickness and intense pain at the back of the head. The onset was so sudden that he was regarded as suffering from sunstroke. The child appeared as weak as a kitten, and at times he was obviously delirious. He squinted painfully, and his head was constantly retracted. He had convulsions, and after each he perspired profusely."

He gradually recovered, and when seen by me on September 1st I only noticed that he seemed weak and that he had a tendency to squint.

The children from the two houses were excluded from school. The houses and bedding were disinfected. All the children around were seen every other day for a fortnight, but nothing of further interest was observed.

A little later a case in a distant parish was reported to me but the medical attendant asked me not to visit. A few days later he informed me that he had come to the conclusion that the case was one of acute infantile paralysis. The child partially recovered and was sent to a London Hospital. The physician there came to the conclusion that the child had had cerebro-spinal meningitis.

PLAGUE.

No suspected case has occurred, nor have I had any reason to suspect that any rats or other animals in this district are infected. A cat which died suddenly after destroying a rat was sent to the Local Government Board for examination, but it was not found to be inflicted by plague. Rats have been particularly numerous at Widford, and caused great trouble to the inhabitants. The Chelmsford Borough Council deposit

their house refuse in the parish, thereby causing a "fly" nuisance in the summer and a "rat" nuisance in the autumn. Now that the area of the Borough has been enlarged, it is a pity that the Town Council cannot deal with its refuse within its own boundaries. No Authority should be permitted to deposit its refuse in the area of another Authority without the site of its deposition being approved by the second Authority. The nuisances caused by the Borough refuse have been so frequent, that unless more care is taken some legal action will have to be considered. Reasonable precautions are not taken to prevent nuisances arising: in fact, it may be said that no precautions whatever are taken. The tip previously used by the Borough was in the Rural District, and the nuisance was so serious to the nearest residents that they threatened legal proceedings. Another site was then found. If suitable tips cannot be found, the promised dust destructor should be provided.

MEASLES, WHOOPING COUGH, ETC.

The district seems to have been singularly free from these diseases during the year. A few cases occurred in Broomfield, Widford, Great Baddow and Rettendon, but the Council was not called upon to make any closing orders.

VIII. BIRTH RATE.

The estimated population for 1910 is 22,770, and is based upon the 1901 census, corrected for the number of houses erected and occupied since that date. It can only be an approximation to the truth, but I feel certain that it will prove at the next census to be so nearly correct that the birth-rates, etc., calculated therefrom will be correct also.

438 births were registered during the year, consequently the birth-rate is 19·2 per thousand—the lowest rate hitherto recorded. This is a sudden drop of over 2 per thousand. I am loth to think that this is due to artificial restraint, but I cannot suggest any other explanation. Unless this downward tendency is stopped, in a comparatively short time the popula-

tion will first become stationary, and then decrease, as is occurring in France, since the tendency is not confined to this district only. This is a problem which requires National attention. The man with a large family finds himself seriously handicapped. Employers of labour look askance at him, and owners of houses object to him as a tenant. I referred to this subject in my last report in its relation to the housing question. (*Vide* Report for 1909, page 19).

The birth-rates in the sub-registration districts were as under :—

Great Waltham	17·4	Average for previous 10 years	21·4
Chelmsford ...	20·0	„	25·1
Great Baddow...	16·3	„	21·9
Ingatestone ...	22·5	„	23·1

IX. MORTALITY STATISTICS.

The total deaths registered in the district were 260, but 8 of these were deaths in institutions of persons not belonging to the district. This reduces the number of deaths in the district of persons belonging to it to 252. On the other hand 25 persons whose domicile was in the district died outside in the Workhouse and in the Chelmsford Infirmary, so that the corrected number of deaths is 277.

The death-rate per 1,000 persons is, therefore, 12·25. The average rate for the previous ten years is 13·25. The death-rate is very low, especially when we consider the excessive proportion of aged people in the district. Of the 277 who died no less than 144, or more than half, were upwards of 65 years of age, 54 were over 80 years of age, and 5 over 90. The oldest person who died during the year was a widow aged 94.

The death-rates in the sub-registration districts were as under :—

Great Waltham...	11·5,	average for previous 10 years	11·7
Chelmsford ...	14·8	„	14·0
Great Baddow ...	11·3	„	13·1
Ingatestone ...	12·1	„	12·2

The above figures might be taken to indicate that the Great Waltham district is the most healthy and the Chelmsford district the least healthy. This may be the case, but it is possible that the age and sex distribution is an important factor.

A study of the death-rates in the parishes which have recently been supplied with water or sewers, or both, would be interesting ; but until the exact populations are ascertained at the ensuing census, any calculations based on such small populations might be very erroneous. The study is therefore deferred until the next annual report, as by that time I hope the exact population of each parish will have been published, or, if not, be obtainable for statistical purposes.

DEATHS OF INFANTS.—The infantile mortality is based upon the number of births during the year and the number of infants under one year of age dying during that period. The rate, therefore, can always be accurately ascertained, since a knowledge of the population is not required.

As there were 438 births and 42 deaths of infants the rate is 95·8 per 1,000 births. This is considerably above the average for the previous 10 years, 78·8. The annual variations are considerable. The lowest rate during the last 10 years was 59 in 1906, and the highest 115 in 1900.

In the sub-registration the rates were as under :—

Great Waltham...	64, average for previous 10 years...	75
Chelmsford ...	99 „ „ ...	97
Great Baddow ...	122 „ „ ...	74
Ingatestone ...	106 „ „ ...	75

Again the Chelmsford area has the highest mortality where a series of years is taken, the rates for the other areas being almost identical and over 20 below that for Chelmsford.

It is apparent from Table V. (appendix) that infants die in this district owing to some defect upon the part of the parents before the children are born. Out of the 42 deaths during the year, no less than 32 were due to premature birth

and debility, and of these 32, no less than 22 died during the first week of life and 27 during the first month.

These premature births and deaths from debility indicate that the women at the time of child-birth were in a debilitated condition. A good deal of attention is given to women during and after child-birth, but apparently a good deal of this care would be better expended before child-birth. District Nurses, Midwives and Women Health Officers should give attention to this subject. The women in this district are not usually engaged in any but domestic occupations, and if they had proper rest and proper nourishment for a period before lying-in, the deaths from prematurity and debility should be very considerably decreased. There is no question that the strongest and healthiest girls go into the towns, leaving the less vigorous behind to marry and increase the rural population. Possibly this may in part explain the unfortunate results recorded.

I am unable to say what proportion of women are attended during their confinement by medical men, but I know that the various Midwives in the district attend comparatively few cases. I assume, therefore, that the great majority are attended by medical men, and that there can be very few who depend merely upon the help from neighbours. Neglect at the time of birth affords no explanation of the mortality during the first week of life, and there can be no doubt that the neglect occurs prior to the birth.

Comparison of number of deaths from wasting disease for the year 1906-1910 :—

	1906.	1907.	1908.	1909.	1910.
During 1st week of life...	8	12	10	11	22
„ 1st month „ ...	12	13	15	16	27
„ 1st year „ ...	15	24	17	18	32

The extraordinary increase during 1910 is remarkable, and it is to this increase that the unusually high infantile mortality is referable. It certainly is to be hoped that this

increase is accidental, and does not indicate that the race of mothers is rapidly deteriorating. Time alone will tell.

DEATHS FROM THE PRINCIPAL ZYMOTIC DISEASES. These deaths have been remarkably few in number. No death was recorded from Measles or Whooping Cough or Diphtheria, and only one each from Scarlet Fever and Typhoid Fever. No death occurred from Infantile Diarrhœa. The smallest number of deaths from the above infectious diseases previously recorded in one year was 4 in 1909. The Table VI. (appendix) gives the number of deaths which have been recorded annually since 1899, and it will be noticed that of recent years there has been a most marked decline. This is probably due to several causes—one being the milder type of disease now prevalent, another to the more sanitary conditions under which people now live, and another to the increased care given by parents to children suffering from infectious diseases. It is quite possible that the cause first mentioned is really due to the second and third, in great measure, if not entirely.

There is no question that a case of infectious disease now causes far more anxiety than was the case a few years ago. People no longer regard it as inevitable that a child shall have Scarlet Fever, Measles or Whooping Cough, nor do they now believe that these diseases "breed." Consequently they take greater care to prevent infection, and a careless neighbour in an infected house soon realises the force of popular opinion. There is a tendency, more especially amongst the better educated classes, to excessive alarm, sometimes almost amounting to panic, when a few cases of infectious disease occur. This is a condition almost as much to be deprecated as one of apathy; certainly it often causes unnecessary trouble to the health officials and hampers them in their endeavours to find and remove the cause of infection.

PHTHISIS. This disease caused 15 deaths during the year. During the last 10 years 199 persons have died from consumption and 66 from other forms of tubercular disease. The appended

Table shews the distribution of the deaths in the various registration areas; but in referring to it, it must be borne in mind that the Great Baddow area included Springfield until 1908, and therefore that the deaths recorded since that date refer to a population of about one-half that of the previous years. I may also add that all deaths in Sanatoria have been deducted, so that the death rates are quite comparable:—

PHTHISIS DEATHS 1901-1910.

Date.	Sub-Registration Districts.				
	Great Waltham.	Chelmsford.	Great Baddow.	Ingatestone.	Great Baddow Parish.
1901...	6	0	8	5	5
1902...	11	1	8	5	3
1903...	6	4	9	5	5
1904...	5	3	7	2	0
1905...	7	4	4	7	1
1906...	4	2	7	3	3
1907...	7	4	6	5	3
1908...	9	2	4	3	2
1909...	5	2	7	6	3
1910...	8	0	4	4	3
	—	—	—	—	—
	68	22	64	45	28
	—	—	—	—	—

DEATHS FROM OTHER TUBERCULAR DISEASES.

1901...	1	0	5	0	1
1902...	3	1	4	3	1
1903...	1	0	4	2	1
1904...	2	2	3	1	1
1905...	0	3	3	3	2
1906...	4	0	2	1	0
1907...	2	1	3	2	2
1908...	1	1	2	0	1
1909...	3	0	1	1	1
1910...	0	0	0	1	0
	—	—	—	—	—
	17	8	27	14	10
	—	—	—	—	—

Estimated per 1,000 population, the average death rates for the last 10 years are as under ;—

S.R. District.	From Phthisis.	From other Tubercular Diseases.	Total.
Great Waltham ...	1·01	0·25	1·26
Chelmsford ...	0·59	0·21	0·80
Great Baddow ...	0·95	0·40	1·35
Ingatestone ...	0·68	0·21	0·89
Great Baddow Parish only ...	1·09	0·39	1·48

Great Baddow Parish and sub-registration area appear to suffer most from Tubercular disease. As the ' shelter ' system has been largely used there during the past few years, I give below the death-rate for the S.R. area and for Great Baddow Parish for the three years 1905-7 and 1908-10, as the results should shew if any marked improvement is taking place :—

	1905-7.	1908-10.	Increase or Decrease.
Phthisis only.			
Great Baddow S.R. area ...	0·75	1·02	+ 0·27
„ Parish ...	0·95	0·90	— 0·05
Other Tubercular Diseases.			
Great Baddow S.R. area ...	0·35	0·20	— 0·15
„ Parish ...	0·55	0·26	— 0·29
All Tubercular Diseases.			
Great Baddow S.R. area ...	1·10	1·22	+ 0·12
„ Parish ...	1·50	1·16	— 0·34

Too much stress must not be laid upon the rates for these shorter periods, but I am afraid the statistics do not indicate that Tuberculosis has been stamped out of Great Baddow or the surrounding parishes. In fact, tubercular diseases are causing more deaths in those areas than in any of the others into which the district has been divided.

Dr. Lyster's explanation is that the cases now occurring in his area are imported cases, and do not originate in the district, but the same argument might be urged with reference to the other areas. There is no more reason why cases should

be imported into the one area than into the others, unless the patients come to one or other of the Sanatoria, and the deaths which have occurred therein have all been excluded. Either there is no marked decrease of the prevalence of tubercular disease in the Great Baddow district or the anticipated decrease is masked by infection imported from without, and which the presence of the Sanatoria alone could explain.

For my own part, I do not think that the establishment of these small Sanatoria on the shelter principle has infected a single person in the district at the present, but it is obvious that such Sanatoria might introduce infection, especially among the members of the staff, if all possible precautions were not taken to prevent it.

I must confess, that after hearing the opinions of patients who have long used Dr. Lyster's shelters, I am greatly disappointed in not being able to advance any statistical evidence in favour of this particular method of treatment. Possibly the areas and populations are too small, and the period of time too limited, to enable accurate conclusions to be arrived at ; but I am bound to give the results as I obtain them, lest afterwards I should be charged with keeping back information which just now is of very special importance.

The following useful information has been abstracted from a recent Report of the Local Government Board having reference to the provision of Sanatoria and Shelters for Phthisis cases :—

1. It is the duty of Boards of Guardians to deal with cases of Phthisis arising amongst the destitute poor and the Local Government Board think it very desirable that Boards of Guardians should arrange with Hospital Authorities for the reception of such cases upon such terms as may be mutually agreed upon, and the sanction of the Board is not required to such an agreement.
2. Under Sec. 131 of the Public Health Act, 1895, a District Council can defray the whole or part of the

cost of the maintenance of Phthisis patients in a Sanatorium.

3. Under the Isolation Hospitals Act, 1893, 1901, the County Council can provide a Hospital or Hospitals for Phthisis patients.
4. Sanitary Authorities can provide shelters for Consumptive patients. The Local Government Board says the Authorities "should be advised by the Medical Officers of Health as to the cases in which such provision would be desirable and as to the arrangements generally for the use of 'shelters.'"

It is obvious therefore that Boards of Guardians and local Authorities (including Joint Hospital Boards) have all the powers necessary for (1) providing Hospitals and Shelters and (2) for paying for patients who are sent to such Hospitals or Shelters.

CANCER. Unfortunately this disease continues to cause nearly as many deaths as tubercular diseases, and the number which occurred last year is above the average. The mere enumeration of numbers may be misleading on account of the varying population. In the following Table, therefore, I have given not only the actual number of deaths but the calculated number per 1,000 population :—

		Deaths from Cancer.	Deaths per 1000 population.		
1900	...	21	...	0.90	Average 1.01
1901	...	26	...	1.09	
1902	...	31	...	1.30	
1903	...	22	...	0.92	
1904	...	18	...	0.76	
1905	..	27	...	1.13	Average 0.97
1906	...	18	...	0.75	
1907	...	28	...	1.16	
1908	..	19	...	0.90	
1909	...	21	...	0.95	
1910	...	25	...	1.10	

There is no evidence of any tendency to increase : the difference between the death-rate for the last five years and that for the previous six years is too small to justify any expression of opinion. I think it may be definitely said that the disease does not show any marked tendency to either increase or decrease in prevalency. We can at least be profoundly thankful that in this district, at least, this terrible disease is not markedly increasing its ravages.

It cannot be too widely known that many people die from Cancer whose lives could be saved if a correct diagnosis was made at an early stage of the disease. Every medical man can tell of cases which have come to him "too late." Unfortunately this delay in calling in the medical attendant is responsible for deaths from many other diseases, as for example phthisis.

OTHER DISEASES. Bronchitis, Pneumonia and other lung diseases have not caused so many deaths as usual, whilst Heart Disease has caused about the average.

X. GENERAL REMARKS.

The mortality and sickness statistics for the year are, on the whole, exceedingly satisfactory, but I am quite certain that this condition cannot be indefinitely maintained. Circumstances over which we have no control may occur any year and cause an excessive mortality from many diseases. A very severe winter, for example, would greatly augment the death-rate, and probably not from lung diseases alone.

Recent advances in knowledge, and especially of our knowledge of the part played by bacteria in the causation of disease, has shewn that many diseases, not of an infectious character, in the popular acceptation of the term, are due to these infinitely minute organisms invading the system. It is becoming more and more obvious that life is one continued struggle, from birth to death, between the tissues of which the body is composed and of bacteria. So long as the body remains in a perfectly healthy condition, the bacteria can gain no entrance and do us no harm. Let vitality become impaired, or let

even the surface of a tissue become broken, and the bacteria will gain admission. Fortunately, even then, the blood is endowed with such marvellous powers that the invading host may be destroyed or driven out. If, however, for any reason the blood has been deprived of these powers, even temporarily, serious disease results. If death occurs, these same bacteria speedily reduce the body to the elements from which it first was formed.

At present we do not know why, during certain seasons or certain years, bacteria of a particular type may be unusually prevalent. This is not to be wondered at, since we do not even know why larger organisms causing disease of plants, at certain seasons, work enormous havoc and at others have little effect. We do not even know why, in certain years, particular birds and animals are much more in evidence than in others. It is not to be wondered at, therefore, that we cannot explain, much less foretell, when certain disease-producing bacteria will be abundant or otherwise.

One fact, however, stands out prominently: Bacteria thrive best in the absence of light and in the presence of dirt. Everything, therefore, which promotes cleanliness and lets in the sunlight and fresh air tends to produce conditions which not only diminish the number of our foes but also favour bodily health and vigour, and renders the whole system more capable of resisting infection.

Sanitation has been advancing slowly but surely in the dim light of imperfect knowledge, and increased knowledge is only proving that the advance has been in the right direction. Of this, however, there never was any doubt, since the marvellous increase in health which has resulted, and which has promptly followed in every case where sanitary improvements have been effected, has always been sufficient proof to every thoughtful person.

In the future, as in the past, every discovery which throws any light on the causation of disease must be taken

advantage of, since it is quite possible that the period during which the body can remain healthy and vigorous may be far longer than we have hitherto supposed. Some few already retain a vigorous body and an unclouded mind to comparative old age, and there is probably no reason why this should not become the rule rather than the exception. In any case, science will not acknowledge any such limitation, and if, with the prolongation of life, social conditions can be improved so as to make life better worth living, we have an ideal to attain which is well worth striving for.

I have already referred to the valuable help the Council's Engineer and Surveyor and the Inspector have always afforded me: they are always at one with me when any improvement in the district is suggested. I can also congratulate the Council upon their enlightened efforts to secure every improvement which is demonstrated to be necessary and feasible. Much has been done in recent years, but there is still scope for further effort; and in the near future I hope that the following matters will receive increased attention:—

1. The Sewerage of Broomfield, the Water Supply being already decided upon.
2. A system of Sewage Purification at Little Waltham.
3. The provision of more commodious Cottages in those parishes in which the requirements are not being met by private enterprise.
4. The provision of better Water Supplies to such parishes as Stock, Buttsbury, and West Hanningfield; to the outlying parts of parishes distant from the water mains, and especially to farms where water is required for dairy purposes.
5. The abolition of all privy cesspits and the substitution of water closets or pail closets.
6. The compulsory provision of covered receptacles for house refuse where there is not sufficient garden ground for its daily disposal.

7. The rendering of the Sanitary Inspector such assistance as will enable him to give more time to the inspection of houses, slaughterhouses, dairies, etc.
8. The provision of a few "shelters" for the use of patients suffering from phthisis, and the provision, in combination with other Authorities, of a small Sanatoria for the instruction and treatment of such patients.
9. The periodical inspection of all milch cows by a Veterinary Surgeon, especially for the detection of cows suffering from tuberculosis.

I have the honour to be, Gentlemen,

Your obedient Servant,

JOHN C. THRESH.

ADDENDUM.

PUBLIC HEALTH LABORATORIES.

These are the private property of the Medical Officer of Health. Examinations required by or for the use of the Council are made free of charge.

During the year the following examinations have been made: -

Chemical analysis of Waters	...	79
Partial ditto	about	100
Bacteriological Exam. of Water	...	51
„ „ for Diphtheria		51
„ „ for Tubercle...		5
Total	...	186

TABLE I.
CHELMSFORD RURAL DISTRICT.
VITAL STATISTICS OF WHOLE DISTRICT DURING 1910 AND PREVIOUS YEARS.

YEAR.	Population estimated to Middle of each Year.	BIRTHS.		TOTAL DEATHS REGISTERED.				TOTAL DEATHS IN PUBLIC INSTITUTIONS.	Deaths of Non-registered residents in Public Institutions.	Deaths of Residents in Public Institu- tions beyond the District.	NETT DEATHS AT ALL AGES.	
		Number.	Rate.*	Under 1 year of Age		At all Ages.					Number.	Rate.*
				Number.	Rate per 1,000 Births registered.	Number.	Rate.*					
1	2	3	4	5	6	7	8	9	10	11	12	13
1900	23,700	505	21.3	58	115	383	16.1	12	2	13	394	16.6
1901	23,800	543	22.8	42	77	281	11.8	9	1	35	315	13.2
1902	23,850	549	23.0	36	65	283	11.9	10	7	34	310	13.0
1903	23,920	581	24.3	54	93	279	11.6	2	8	45	316	13.2
1904	23,920	534	22.3	46	86	282	11.8	2	2	34	314	13.1
1905	23,950	544	22.7	37	68	267	11.1	2	2	21	286	12.0
1906	24,050	559	23.3	33	59	249	11.4	13	10	39	278	11.6
1907	24,100	550	22.8	45	82	285	11.8	12	9	67	313	14.2
1908	20,650	494	23.9	34	69	242	11.7	3	3	48	287	13.9
1909	22,360	471	21.6	35	74	226	10.1	3	2	41	265	11.85
Averages for years 1900-1909	23,430	533	22.8	42	79	278	11.9	7.4	4.6	37.7	311	13.3
1910	22,770	438	19.2	42	96	260	11.4	8	8	25	277	12.2

*Rates in Columns 4, 8, and 13 calculated per 1,000 of estimated population.

NOTE.—By the term "Non-residents" is meant persons brought into the district on account of sickness or infirmity, and dying in public institutions there; and by the term "Residents" is meant persons who have been taken out of the district on account of sickness or infirmity, and have died in public institutions elsewhere.

Area of District in acres (exclusive of area covered by water), 82,772. Total population at all ages, 20,309
Number of Inhabited Houses, 4,817
Average number of persons per house, 4.2 } At Census of 1901

I. Institutions within the District receiving sick and infirm persons from outside the District.	II. Institutions outside the District receiving sick and infirm persons from the District.	III. Other Institutions, the deaths in which have been distributed among the several localities in the District.
Billerica Isolation Hospital. " Shelters (Consumption). Sandon " " Chelmsford Joint Hospital.	Workhouse. Chelmsford Infirmary.	

Is the Union Workhouse within the District? No.

CHELMSFORD RURAL DISTRICT.
TABLE II. VITAL STATISTICS OF SEPARATE LOCALITIES IN 1910 AND PREVIOUS YEARS.

NAMES OF LOCALITIES	GREAT WALTHAM.				CHELMSFORD.				GREAT BADDOW.				INGATESTONE.			
	Population esti- mated to middle of each Year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all ages.	Deaths under 1 year.	Population esti- mated to middle of each year.	Births regis- tered.	Deaths at all Ages.	Deaths under 1 year.
YEAR.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.	a.	b.	c.	d.
1900	6415	139	96	12	3706	92	73	9	7196	123	129	18	6290	131	60	9
1901	6415	147	78	10	3760	92	43	8	7385	169	103	14	6240	151	96	19
1902	6415	136	88	5	3770	102	55	10	7420	167	96	16	6240	135	91	10
1903	6420	165	79	14	3780	96	54	12	7450	164	106	14	6240	144	71	5
1904	6450	122	93	15	3780	100	54	11	7450	160	91	6	6240	152	78	14
1905	6450	153	92	11	3780	90	60	14	7480	164	74	6	6240	137	61	6
1906	6500	129	84	8	3790	108	48	5	7510	173	89	10	6250	149	57	10
1907	6520	136	105	11	3790	95	52	11	7530	169	90	9	6260	150	96	14
1908	6600	140	98	13	3500	79	44	3	4250	115	62	6	6300	160	83	12
1909	7029	150	75	6	3490	74	39	7	4930	96	66	12	6910	151	84	10
Averages of Years 1900-1909	6521	140	76	10.5	3714	93	52	9	6860	150	90	11.1	6321	145	78	10.9
1910	7200	125	83	8	3520	71	52	7	5030	82	57	10	7020	160	85	17

TABLE III.

CHELMSFORD RURAL DISTRICT COUNCIL.

CASES OF INFECTIOUS DISEASE NOTIFIED DURING THE YEAR, 1910.

NOTIFIABLE DISEASE.	CASES NOTIFIED IN WHOLE DISTRICT.						TOTAL CASES NOTIFIED IN EACH LOCALITY.				NO. OF CASES REMOVED TO HOSPITAL FROM EACH LOCALITY.				Total cases removed to Hospital.	
	At Ages—Years.						Great Waltham.	Chelmsford.	Great Baddow.	Ingatestone.	Great Waltham.	Chelmsford.	Great Baddow.	Ingatestone.		
	At all Ages	Under 1	1 to 5	5 to 15	15 to 25	25 to 65										65 and upwards
Small-pox	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cholera	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diphtheria (including Membranous Croup)	24	...	4	14	4	2	...	...	...	5	...	...	...	...	3	13
Erysipelas	2	...	...	...	...	2	...	...	...	1	...	...	...	...	...	...
Scarlet Fever	90	...	16	35	25	13	4	9	5	72	3	6	5	57	71	...
Typhus Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Enteric Fever	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Relapsing Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Continued Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Puerperal Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Plague	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals	117	...	20	49	29	18	1	6	21	12	78	5	9	10	60	84

Isolation Hospital, Chelmsford Joint Hospital, Great Baddow. Total available beds, 21. Number of Diseases that can be con- currently treated, 2. Also Small-Pox Hospital at Galleywood for 6 beds, can be used for other cases.

TABLE IV.
CHELMSFORD RURAL DISTRICT.—CAUSES OF, AND AGES AT, DEATH DURING YEAR 1910.

CAUSES OF DEATH.	DEATHS IN WHOLE DISTRICT AT SUBJOINED AGES.						DEATHS IN LOCALITIES (AT ALL AGES).				DEATHS IN PUBLIC INSTITUTIONS.	
	All ages.	Under 1.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.	Great Waltham.	Chelmsford.	Great Baddow.		Ingatesstone.
Small-pox ..	...	...	...	...	...	...	...	...	...	...	...	...
Measles ...	...	...	...	...	...	...	...	...	...	...	...	...
Scarlet Fever ..	1	...	...	1	...	...	...	...	...	1	...	...
Whooping Cough ...	...	...	...	...	...	...	...	...	...	...	...	...
Diphtheria (including Membranous Croup)	...	...	...	...	...	...	...	...	...	...	...	...
Croup	...	...	...	...	...	...	...	...	...	...	...	2
Fever { Typhus	...	...	...	...	...	...	...	...	...	...	...	...
{ Enteric	1	...	...	...	...	1	...	...	...	1	...	1
{ Other continued	...	...	...	...	...	...	...	...	...	...	...	...
Epidemic Influenza ...	6	...	...	...	2	2	2	...	2	...	4	...
Cholera ...	...	...	...	...	...	...	...	...	...	...	...	...
Plague ...	...	...	...	...	...	...	...	...	...	...	...	...
Diarrhoea ...	...	...	...	...	...	...	...	...	...	...	...	...
Enteritis ...	...	...	...	...	...	...	...	...	...	...	...	...
Gastritis ...	...	...	...	...	...	...	...	...	...	...	...	...
Puerperal Fever ...	...	...	...	...	...	...	...	...	...	...	...	...
Erysipelas ...	...	...	...	...	...	...	...	...	...	...	...	...
Phthisis (Pulmonary Tuberculosis)	15	...	...	1	3	9	3	8	...	4	3	5
Other Tuberculous Diseases	2	...	...	2	...	10	15	5	...	...	2	...
Cancer, Malignant Disease	25	...	...	...	...	3	12	6	6	4	10	...
Bronchitis ...	18	2	1	...	...	3	2	3	1	3	6	...
Pneumonia ...	7	...	2	...	...	4	1	1	4	...	...	...
Pleurisy ...	5	...	...	...	...	...	...	...	...	1	...	...
Other Diseases of Respiratory Organs	1	...	...	...	...	...	...	...	...	...	...	...
Alcoholism	...	...	...	...	...	...	...	...	...	...	...	...
Cirrhosis of Liver }	...	...	...	...	...	...	...	...	...	...	...	...
Venereal Diseases	16	16	...	...	...	...	...	4	...	4	7	...
Premature Birth ...	...	...	...	...	...	...	...	...	...	...	...	...
Diseases and Accidents of Parturition	...	...	...	...	...	...	...	...	...	...	...	...
Heart Diseases	41	...	...	...	...	16	25	11	9	11	10	...
Accidents ...	5	3	...	1	...	1	...	2	1	2	...	...
Suicides ...	3	...	...	...	...	2	1	1	...	1	1	...
All other causes	131	21	2	...	1	25	82	42	22	25	42	...
All causes	277	42	5	5	6	75	144	83	52	57	85	8

TABLE V.

CHELMSFORD RURAL DISTRICT.—INFANTILE MORTALITY DURING THE YEAR 1910.

Deaths from stated Causes in Weeks and Months under one Year of Age.

Cause of Death.		Under 1 Week	1-2 Weeks.	2-3 Weeks.	3-4 Weeks.	Total under 1 Month.	1-2 Months.	2-3 Months.	3-4 Months.	4-5 Months.	5-6 Months.	6-7 Months.	7-8 Months.	8-9 Months.	9-10 Months.	10-11 Months.	11-12 Months.	Total Deaths under One Year.
i. Common Infectious Diseases.	Small-pox ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
	Chicken-pox ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
	Measles ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
	Scarlet Fever ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
ii. Diarrhoeal Diseases.	Diphtheria (in. Membranous Croup)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
	Whooping Cough ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
	Diarrhoea, all forms	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
	Enteritis, Mucous and Gastro...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
iii. Wasting Diseases.	Gastritis, Gastro-intestinal Catarrh	11	1	2	1	15	1	...	...	...	...	...	...	...	...	...	...	16
	Premature Birth ...	5	...	...	...	5	1	...	...	1	...	...	...	...	...	...	...	7
	Congenital Defects	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Injury at Birth ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
iv. Tuberculous Diseases.	Want of Breast-milk, Starvation	6	1	...	...	7	1	1	1	...	...	...	...	...	...	...	...	9
	Atrophy, Debility, Marasmus	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Tuberculous Meningitis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Tuberculous Peritonitis: Tuberculous Mesenterica	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
v. Other Causes.	Other Tuberculous Diseases	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Erysipelas ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Syphilis ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Rickets ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Meningitis (<i>not Tuberculous</i>)	...	1	1	...	2	...	...	...	...	...	...	...	...	...	...	...	2
	Convulsions	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2
	Bronchitis ...	1	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	...
	Laryngitis ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Pneumonia	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	2
	Suffocation, overlying	3	...	1	...	4	...	...	...	...	...	...	...	...	...	...	...	4
	Other Causes	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		26	3	4	1	34	2	1	2	2	1	...	...	...	...	...	...	42

District (or sub-division) of Chelmsford Rural.

Deaths from all Causes at all Ages, 277. Population (estimated to middle of 1910), 22 770.

TABLE VII.
FACTORIES, WORKSHOPS, LAUNDRIES, WORKPLACES,
AND HOMEWORK.

1.—INSPECTION.

Including Inspections made by Sanitary Inspectors or Inspectors of Nuisances.

Premises.	Number of		
	Inspections	Written Notices.	Prosecutions
Factories (Including Factory Laundries) ...	—	—	—
Workshops (Including Workshop Laundries) } Workplaces	106	3	Nil
Total.	106	3	Nil

2.—DEFECTS FOUND.

Particulars.	Number of Defects.			Number of Prosecutions
	Found	Remedied	Referred to H.M. Inspector	
<i>Nuisances under the Public Health Acts—</i>				
Want of cleanliness	—	—	—	Nil
Want of ventilation	—	—	—	Nil
Overcrowding	—	—	—	Nil
Want of drainage of floors	—	—	—	Nil
Other nuisances	—	—	—	Nil
Sanitary accommodation { insufficient ..	—	—	—	Nil
{ unsuitable or defective ..	—	—	—	Nil
{ not separate for sexes ..	—	—	—	Nil
<i>Offences under the Factory & Workshop Act.</i>				
Illegal occupation of underground bake-house	—	—	—	Nil
Breach of special sanitary requirements for bakehouses	3	3	—	Nil
Other Offences	—	—	—	Nil
Total... ..	3	3	—	Nil

TABLE VII.—*continued.*

FACTORIES, WORKSHOPS, LAUNDRIES, ETC.

4.—REGISTERED WORKSHOPS.

Workshops on the Register (s. 131) at the end of the year.	Number
Bakers Shops	39
Carpenters Shops	29
Blacksmiths Shops	36
Boot Repairing Shops	22
Tailoring Shops	0
Harness Making and Repairing Shops	7
Laundries	7
Dressmaking Shops... ..	6
Cycle Repairing Shops	6
Wheelwrights Shops	29
Painters and Plumbers Shops	16
Total number of Workshops on Register ...	197

5.—OTHER MATTERS.

Class.	Number
Matters notified to H.M. Inspector of Factories :—	
Failure to affix Abstract of Factory and Workshop Act (s. 133)	Nil
Action taken in matters referred by H.M. Inspector as remediable under Public Health Acts, but not under the Factory and Workshop Act (s. 5)	Notified by H.M. Inspector Nil
	Reports (of action taken) sent to H.M. Inspector ... Nil
Other	Nil
Underground Bakehouses (s. 101) :—	
Certificates granted during the year	Nil
In use at the end of the year	Nil

JOHN C. THRESH, M.D

TABLE VIII.

SUMMARY OF WORK done through the Sanitary Inspector
in the Rural Sanitary District of Chelmsford during the
year ending December 31st, 1910.

	Total Number for year.	Notes, Results of Inspection, &c.
1. Complaints received ...	17	
2. Nuisances detected without complaint ...	253	
3. Nuisances abated ...	241	
4. Notices served ...	270	
5. Summonses taken out ...	1	
6. Convictions ...	1	
7. Cottages inspected ...	610	
8. Lodging-houses inspected ...	1	
9. Slaughter-houses inspected...	14	
10. Bakehouses inspected ...	25	
11. Dairies and Milkshops inspected ...	85	
12. Cowsheds inspected ...	85	
13. Workshops inspected ...	35	
14. Filthy houses cleansed, sec. 46 Public Health Act, 1875	12	
15. Houses disinfected ...	98	
16. Overcrowding abated ...	6	
17. Houses placed in habitable repair ...	9	
18. Houses closed...	1	Buttsbury.
19. Houses erected or re-built for which Water "Certifi- cates" were applied ...	70	
20. "Certificates" granted ...	24	For 42 houses
21. " " deferred ...	14	For 28 "
22. Wells sunk or improved supplies of Water afforded ...		Surveyor's department.
23. Wells cleansed or repaired ...		do.
24. Wells closed ...		do.
25. Houses connected with sewers ...		do.
26. Houses connected with water mains ...		do.
27. Earth, pail, or improved Privies constructed or existing Privies altered ...	35	27 Privies altered into pail closets, and 8 new closets constructed.
28. Privies and W.C.'s repaired	16	
29. Cisterns cleansed, repaired, or covered ...	Nil	
30. Animals improperly kept removed ...	1	
31. Samples of water taken for Analysis ...	112	
32. Compensation paid for destruction of infected bedding ...	£1/8/9	
33. Seizures of unsound Meat, &c.	Nil	

WILLIAM EDSER,
Sanitary Inspector.

STATE OF NEW YORK

In SENATE,
January 10, 1892.

REPORT
OF THE
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IN ANSWER TO A RESOLUTION
PASSED BY THE SENATE,
JANUARY 10, 1892.

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