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LEIGH-ON-SEA  
URBAN DISTRICT COUNCIL.

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R. COOPER.

A. U. HIGGINS.

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W. CARLYLE CROASDELL.

*Medical Officer—*


W. DOUGLAS WATSON, M.R.C.S., L.R.C.P.

*Surveyor—*

J. W. LIVERSEDGE, Assoc. M. Inst. C.E.

*Sanitary Inspector—*

A. SIDWELL.



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# REPORT.

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GENTLEMEN,

I have the honour to submit to you my twelfth Annual Report on the health of the town of Leigh-on-Sea, and at the same time beg to render my thanks to the Chairman and members of the Health Committee for their valuable advice, assistance and support during the past year.

In reviewing the sanitary record of the year, the most noteworthy points are:—

1. The rapid growth of the district.
  2. The low death rate.
  3. The small amount of infectious disease.
  4. The extensive improvements at the Sewage Outfall Works.
1. The rapid growth of the district is shown not only by the increase in the population (see Table I.) but also by the following:—
- (a) In 1908 178 plans for new buildings were passed as against 128 in 1907.
  - (b) The new Infant Schools which were opened in January, 1908, to accommodate 250 children, are now full, there being 270 on the books.
2. The death rate, though slightly higher than in 1907, remains very low. The rate, 10.07, includes five deaths of Leigh residents in the Rochford Infirmary, but does not exclude the deaths of persons not really belonging to the district, or those who, having come to Leigh for the benefit of their health, have died after a short residence. The rate, 9.28, is that of the deaths actually registered in Leigh during the year, and compares very favourably with the death rate for England and Wales, which was 14.7; and also with the rate for England and Wales less the 218 great towns, which was 13.8.

For further consideration I give the death rates for 1908 of the following towns and districts which have not been selected, but are those of which reports have been published :—

Sheffield City "lowest rate ever recorded"	15.9
Maldon, Rural District .....	12.7
Chelmsford, Rural District .....	13.9

3. Only seven cases of infectious disease were notified during 1908 (see page 9).  
No case of typhoid fever occurred.
4. The work carried out at the Sewage Outfall Works is in continuation of that begun in 1907, viz., in the nature of improvements in the system installed by the Council in 1900. The work is referred to later. (see page 11 and Surveyor's Report page 20).

Leigh twenty years ago was a small village of some two thousand inhabitants engaged almost exclusively in the fishing industry. The houses, which were chiefly of wood, clustered almost on the sea level, at the foot of a hill about one hundred feet high.

This old village remains, but is to-day a small part of the town. The slope of the hill facing south has been covered with villa residences extending now over the rising ground to the north and west, occupied by business men who, by the improved railway service, are enabled to reach London in fifty minutes; and by artisans engaged chiefly in the building trade.

The soil is loamy clay interspersed with gravel.

The older houses referred to above are gradually being replaced by modern artisan dwellings. There still remain many which cannot be held to be in a satisfactory condition. A report on the sanitary condition of a small area in the lower town was placed before your Council during the year, but no action taken as extensive improvements were carried out by the landlord.

For the erection of new houses plans have to be submitted to your Council which are passed when in accordance with the building byelaws, inspection being made by your



Surveyor and his staff of the excavations, foundations, concrete over site and course of erection, and certificates granted for occupation upon satisfactory completion.

### **Population.**

The revision of the building byelaws is under consideration and will be shortly completed.

I am of opinion that the most reliable means of estimating the population in a district growing rapidly by the influx of residents from other parts is by the number of inhabited houses and the number of occupants per house. At the last census (1901) this number was 4.6, which is generally recognised as being a rather low figure. This gives an estimated population for the middle of 1908 of 6,352, which is therefore at any rate not an exaggerated figure.

### **Births.**

During the year 133 births were registered; sixty-seven male, sixty-six female; the birth rate per 1,000 being 20.9, which is the lowest yet recorded in Leigh.

### **Deaths.**

Fifty-nine deaths were recorded in Leigh last year, the rate per 1,000 being 9.28.

### **Infantile Mortality.**

Eleven deaths occurred of infants under one year, the rate per 1,000 births being 82.7. This is much below the average for the past ten years, which was 100.5. That for England and Wales was 121, and England and Wales, less the 218 towns, 110.

Cards are distributed giving instruction in infant feeding and for the prevention of diarrhoea. The District Nurse (maintained by voluntary subscription) assists very materially in giving such instructions and generally acting as a health visitor.

TABLE I.—**Vital Statistics**

of Whole District during 1908 and previous Years of  
Leigh-on-Sea.

Year.	Population estimated to Middle of each Year.	BIRTHS.		Total Deaths Registered in the District.			
		Number.	Rate.	Under 1 Year of Age.		At all Ages.	
				Number.	Rate per 1000 Births registered	Number.	Rate.
1898	3750	102	27·2	15	147·0	36	14·9
1899	4000	101	25·2	14	138·6	41	10·25
1900	4100	104	25·38	9	86·5	55	13·4
1901	3667	107	29·18	6	56·1	42	11·42
1902	3767	93	24·7	10	107·4	60	15·9
1903	4064	111	24·85	7	63·06	40	9·84
1904	4773	120	25·12	18	150	67	14·03
1905	5083	110	21·6	5	45·45	53	10·4
1906	5354	116	21·66	14	120·6	58	10·81
1907	6035	143	23·7	13	90·6	53	8·74
Averages for years 1898-1907.	4460·3	110·7	24·8	11·1	100·5	52·5	12·1
1908.	6352	133	20·9	11	82·7	59	9·28

Deaths of Residents registered in Public Institutions  
beyond the District ... .. 5

Deaths at all Ages belonging to the District ... .. 64—10·07

AREA ... .. 2,332 acres, 2 roods, 20 poles.

POPULATION ... .. 3,667 } At  
Number of Inhabited Houses ... .. 797 } Census  
Average number of Persons per house ... .. 4·6 } of 1901.

UNION WORKHOUSE, outside the District at Rochford.

INSTITUTION, outside the District, receiving sick and infirm persons from  
the district, Rochford Infirmary.



TABLE III.—**Cases of Infectious Diseases**  
notified during the Year, 1908.

NOTIFIABLE DISEASES.	Cases Notified in Whole District. At Ages—Years.						
	All Ages.	Under 1	1—5	5—15	15—25	25—65	65 and upwards.
Diphtheria (including Mem- branous Croup .. .. .	2	...	1	1	...	...	...
Scarlet Fever .. .. .	5	..	...	5	...	...	...
Totals .. .. .	7	...	1	6	...	...	...

TABLE IV.—**Causes of, and Ages at Death**  
during the Year, 1908.

CAUSES OF DEATH.	Deaths at the subjoined ages of "Residents," whether occurring in or beyond the District.						
	All Ages:	Under 1 year.	1 and under 5	5 and under 15	15 and under 25	25 and under 65	65 and upwards
Measles .. .. .	1	...	1	...	..	...	...
Diphtheria (including Mem- branous Croup .. .. .	1	...	1	...	...	..	...
Diarrhœa .. .. .	1	1	..	..	...	...	...
Phthisis, (Pulmonary Tuber- culosis .. .. .	10	...	..	..	3	6	1
Other Tuberculous diseases	1	...	..	1	...	...	..
Cancer, malignant disease ..	4	...	...	...	...	...	4
Bronchitis .. .. .	10	4	1	...	...	2	3
Pneumonia .. .. .	1	..	1	...	...	...	...
Pleurisy .. .. .	1	..	..	...	1	..	...
Alcoholism, Cirrhosis of liver	1	...	...	...	...	..	1
Premature birth .. .. .	3	3	..	...	...	...	...
Heart disease .. .. .	7	..	...	...	...	4	...
Accidents .. .. .	1	1	...	...	...	...	...
Suicides .. .. .	1	...	...	...	...	1	...
Kidney diseases .. .. .	3	...	...	...	...	...	3
Apoplexy .. .. .	4	...	...	...	..	3	1
Old age .. .. .	5	...	...	...	..	..	5
Uncertified .. .. .	3	1	..	...	...	2	...
All other causes .. .. .	6	1	...	...	...	2	3
All causes .. .. .	46	11	4	1	4	20	24



TABLE V.—**Infantile Mortality** during the Year, 1908.

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 1 Year
	Certified. Uncertified																
All Causes	4	..	..	..	2	1	1	1	1	1	..	1	1	..	1	..	10
Diarrhœa, all forms	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Premature birth	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Congenital Defects	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Atrophy, Debility, Marasmus	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Bronchitis	..	..	..	..	1	1	1	1	..	..	..	..	1	..	1	..	..
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11

Population (estimated to middle of 1908) 6352.

Births in the year—Legitimate 129. Deaths in the year of Legitimate Infants 10.

Illegitimate 4. Deaths from all Causes at all Ages . . . . . Illegitimate Infants 1.

### Deaths from Zymotic Diseases.

One death occurred from diphtheria, one from measles, and one from diarrhœa.

The death rate per 1,000 persons being 0.47, while that for England and Wales was 1.29, and for England and Wales, less the 218 towns, 0.99.

### Infectious Diseases.

Seven notifications were received as follows:—

Scarlet Fever .....	5
Diphtheria .....	2

The scarlet fever cases were all of mild type, and occurred at different times in the year.

The infection in these cases was possibly from personal contact with mild unrecognised cases, or from contact with persons wilfully exposed while contagious, which I suspect not infrequently occurs in public conveyances.

### Phthisis.

Ten deaths occurred from this disease.

As I reported last year, the number of deaths from this disease is increasing owing to the number of invalids who come to reside here.

I am glad to record that your Council have approached the Local Government Board to include Phthisis in the list of diseases compulsorily notifiable. The National Society for the Prevention of Consumption pamphlets are distributed amongst the known cases, and disinfection carried out after a death has occurred, as well as after removal, when known.

I trust that in the near future steps may be taken to prevent the spread of the disease, especially in advanced cases, by home instruction, and by the provision of a hospital, or home, for suitable cases.

My opinion is that far more benefit would accrue to the community in Leigh by the erection of a hospital or home



for consumptive cases on the site recently purchased for an Isolation Hospital, than the building of hospital accommodation for the few cases of scarlet fever or diphtheria that occur in Leigh.

### **Hospital for Isolation of Infectious Diseases.**

The purchase of the site selected the previous year was completed. The ground lies in the north-east of the parish and is six acres in extent, with a slope to the south.

### **Factories and Workshops.**

Inspections have been made during the year. Two factories have been discontinued: one, a mineral water manufactory, the site of which is now used for firewood cutting; and the other a post card manufactory.

No notifications have been received, and nothing has occurred to notify to H.M. Inspector.

### **Dairies, Cowshed and Milkshops.**

General and special inspections have been made. Further regulations were submitted, but have not yet come into force.

On the whole there has been an improvement in the conditions, those engaged in the provision of milk showing they realised the necessity and advantage of strict cleanliness.

This is especially noticeable in the case of the milkshops.

### **Removal of House Refuse.**

This work is carried out under contract, and at certain times numerous complaints have been made. In many cases no doubt the Contractor's men have been at fault, but some at least have occurred through the closing of the premises, the dustman being unable to gain admittance. In every case where the householder has sent a written complaint to the Council Offices the refuse has been removed within twenty-four hours. I suggest that Ratepayers might be notified by special bills or on their rate-demand notes, that—

1. Complaints of neglect should be sent in writing to the Council's Offices.



2. The dustmen have instructions that they are not to remove vegetable and garden refuse.

### **The Water Supply.**

The District is now served by the Southend Water Company, who have maintained a constant supply of excellent water. A large amount of work has been done by the Company during the year in joining up the Leigh Works with their main system, and laying a number of branch mains for new streets. There are now very few houses in the outlying parts of the parish which depend for their water supply on surface wells.

### **Highways.**

The work done is fully reported by your Surveyor in his report joined to this, and I would only refer to the improvements in the Church Hill paving, the Broadway, and the corner of the New Road; and also to the provision of Surface Water Drainage and the Storm Water Culvert in Cranleigh Drive.

### **Sewage Works.**

The alterations and improvements begun in 1907 have been continued during the past year (*vide* Surveyor's Report).

Although the effluent compared very favourably with any discharged into the Thames Estuary, your Surveyor, Mr. Liversedge, was of opinion that an improvement might be made in several ways.

In the first place, the beds had been worked at a disadvantage from the first, owing to the large amount of sludge from cesspool contents emptied into the drains clogging the beds. Secondly, it was found that a considerable amount of the sea water found its way into the beds; and, thirdly, a large quantity of storm water did the same.

Your Council are to be congratulated on the improved effluent resulting—an improvement which will probably gradually increase; and also on the general appearance of the works.



## Schools.

The Council Schools in the district are all Elementary Schools, and consist of the following :—

THE NORTH STREET SCHOOLS, built in 1891 on a site of about half an acre and since added to—now accommodating 650 scholars. The building is a single storey one, and consists of two wings; the boys' and girls' schools each having six class rooms.

The building is in good repair, and the ventilation generally is good. On the other hand, the class rooms are not well arranged, a great deal of space being occupied in passages, the whole of the class rooms not being sufficiently under the Head Teachers' supervision.

No accommodation whatever is provided for retiring rooms for the head teachers or staff.

In the case of the boys' school this drawback is the more regrettable as there are several women teachers.

These Schools will be most inconvenient for medical inspection on this account.

In front (on the south side) of these Schools a new block for infants was completed in 1907 and opened in 1908, to accommodate 250 children. This is an excellent building with all the best modern improvements, but, as pointed out above, at the present time hardly fulfils the needs of the district. In my opinion it is a pity that this site was chosen as it has blocked in the Boys' and Girls' School, and the playgrounds of each being between the two buildings, either School is liable to be disturbed by the noise of the other should the times of play not coincide.

On the North side of the Boys' and Girls' Schools there remains a corrugated iron building erected as a temporary infants' school, used now for special classes on the girls' side.

The boys', girls' and infants' latrines are not well placed, being in too open positions in view of the playgrounds.

The boys' latrines are unsatisfactory as the brickwork surrounding the urinals is fouled by percolation and the flushing is insufficient. It would be advisable to replace the slate slabs with porcelain urinals with automatic flushing.

The bricked ashpit is insanitary and should be renewed from the inside of the boys' playground.

The earth closets erected in connection with the temporary school and the soak away urinal attached, should be replaced by w.c.'s.

HERSCHELL'S SCHOOL.—This building is entirely unsuited to modern requirements, the ventilation being imperfect, and the air space inadequate.

There is no playground, the only open space being 3ft. 7in. at the rear, or north side of the building, and 7ft. on the east side where the w.c.'s are situate. These and the urinals are not satisfactory.

### **Medical Inspection of School Children.**

The Act providing for Medical Inspection of School Children has been in force since January 1st, 1908, but no examination has yet taken place of the children in the Leigh Council's Schools.

I regret that arrangements were not made for the work to be carried out by me as Medical Officer of Health, and suggest that it should be so arranged now.

I would draw attention to the following extracts, which indicate the advisability of employing the local Medical Officer of Health.

Board of Education Memorandum, November 22nd, 1907. The authority "should use to the *utmost extent* the existing machinery of Medical and Sanitary administration . . . . . rather than supplanting it by bringing into existence new agencies partially redundant and possibly competing.



“ Provided that the principle of co-ordination of the medical services is secured in practice and that requisite personal and professional qualifications for the new work are present, it is clear that the function of the School Medical Officer may be exercised by the Medical Officer of Health.”

The Memorandum further points out that the home is the point at which health must be controlled ultimately, and with reference to the character and degree of medical inspection “ it is the broad simple necessities of a healthy life which must be kept in view.”

Dr. Newsholme, in a paper on the co-ordination of the Public Medical services, said—

“ The Medical Inspection of Schools by Doctors unrelated to the Medical Officer of Health illustrates well the evils of inco-ordination,” and again—

“ Paradoxical as it may appear, much of the Medical Inspection of Schools and Scholars, if it is to be efficient, must take place in the homes of the scholars.”

### **Sanitary Proceedings.**

Complaints received .....	56
Nuisances detected without complaint ...	147
Nuisances abated .....	203
Notices served .....	44
Slaughter Houses inspected .....	8
Bakehouses inspected .....	13
Dairies and Milkshops inspected .....	12
Cowsheds inspected .....	24
Workshops inspected .....	14
Rooms disinfected .....	10

### **Legal Proceedings.**

In connection with Sanitary Work your Council were involved in certain legal actions during the year. The case of Hanrahan is referred to in your Surveyor's report.

A closing order from the Justices was obtained for an insanitary dwelling at the rear of the Elms Hotel at your representation.

Similar action before the Justices in the case of another unsatisfactory wooden structure was unsuccessful.

Owing to flooding of premises in the old town by sewage, action for damages was taken by the owners. The case is still pending.

### **Summary of Improvements, etc., during the Year.**

Sewage Works.  
Storm Water Provision.  
Roads made up and Sewered.  
Broadway Improvement.  
Isolation Hospital Site.  
Western Cliffs secured for the public.  
Tree Planting in Streets.  
Church Hill Paved.  
Cliff and Bell Wharf Conveniences.

In conclusion, Gentlemen,

I think that this report confirms the opinion derived from previous annual reports that we are very fortunate in living in a town with so great natural advantages. We must remember that as the town develops we must be prepared to exercise greater vigilance in the prevention of disease, and greater foresight in the provision of means to this end, and I therefore ask you to consider the advisability of providing improved methods of disinfection, especially for cases of consumption, and also the question of refuse removal and possibly the provision of a refuse destructor.

I am,

Your obedient Servant,

W. DOUGLAS WATSON.





# SURVEYOR'S ANNUAL REPORT

For Year ending 31st December, 1908.

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TO THE CHAIRMAN AND MEMBERS OF THE COUNCIL.

GENTLEMEN,

I beg to submit my third Annual Report on work connected with my Department.

## **Water Supply.**

During the year a constant and regular supply of water has been provided for the district by the Southend Water Works Company, who have laid trunk mains coupling up the Leigh Works with the main system. They have laid a number of branch mains in streets wherever building operations are being carried out.

## **Highways.**

There are eight miles six furlongs of highways, or thereabouts, repairable by the inhabitants at large, including five furlongs of new streets recently made up under the Private Street Works Act, 1892, which have been adopted as highways during the year. Separate surface water sewers have been laid in all new streets for the conveyance of rainfall from the road surface and as much roof and yard water as possible.

The general work of cleansing and maintaining macadam surfaces has received regular attention. Closed carts have been adopted in scavenging streets in lieu of open carts, which is a distinct sanitary convenience. The public road improvements carried out during the year include Broadway Improvement, laying kerbing, channelling, flagging, surface water drainage and making good Church Hill Improvement, paving with 4in. gritstone setts on concrete, flight of steps and drainage works Storm Water Culvert at Cranleigh Drive; New Road Improvement, widening at Ship Hotel Corner.

Keen public interest was taken in the paving of Church Hill, both before and at the Local Government Board Inquiry, and since the work has been completed. The hill, having a gradient of 1 in 5.5 opinion was expressed that it would be dangerous in frosty weather. The Local Government Board's Inspector was quite satisfied with the nature of the materials recommended for adoption by the Council, and he emphasised the fact that there was no more suitable material for the purpose.



This opinion has been so far justified. The paving during recent keen frost has been under observation, and on several occasions when it has been absolutely necessary to sand many of the ordinary asphalted and flagged footpaths no such treatment was necessary on the Hill (except at the flight of steps), the grip on the paving being perfectly good.

The Council have no county main roads under their control. Motor traffic on the ordinary roads repairable by the Council has, so far, not necessitated any special treatment of the macadam by tar or oil preservative. Calcium chloride has been used on sections of roads for dust-laying purposes and given satisfactory results.

Eight thousand sup. yards, or thereabouts, of ordinary asphalted footpaths have been treated with a coating of hot coal tar and crushed cockle shell dressing, which has a very beneficial effect on the life of the footpath.

Taking the ordinary life of this class of pavement at from seven to twelve years, by treating the surface in this manner every two or three years at a cost of  $\frac{3}{4}$ d. to 1d. per sup. yard treated, its life may often be doubled.

It is interesting to note that the cockle shells when crushed form a firm binding and are much preferable either to sand or granite grit, and as the cockle industry is the main one of the district the shells can be obtained at a reasonable price.

The necessity of laying down some more durable and less dusty material than ordinary macadam in the Broadway which is the main business thoroughfare in the district has received the careful attention of the Highways Committee and the Council.

A scheme for dealing with this section of roadway is being developed, but could not satisfactorily be carried out until the tram track belonging to the Southend Corporation has been relaid—which work has recently been started.

So far the Council has been able to supply the necessary water for road watering purposes from Dobbin's well, the property of the Council.

In future, owing to the increased number of roads, it has been decided to obtain a supplemental supply for this purpose from the Water Company's mains.



Seven hundred and eighty lin. yards of private streets have been made up during the year (viz., Pall Mall and Canonsleigh Crescent), but not yet adopted.

Tree planting is being carried out in all new roads, and the Council has during the year decided to plant about a dozen of the existing highways.

The narrowness of some of the footpaths will detract to some extent from the full appreciation of this class of work, which adds materially to the beauty of your streets. It is, in my opinion, undesirable to plant streets with trees where the footpaths are less than seven feet wide, nor should the trees be less than twenty yards apart.

Instructions have been given to your Surveyor to prepare plans, specifications, estimate and apportionments in respect of the making up of the following private streets—Victoria Drive, Torquay Drive, Burnham Road, Grange Road, Station Road, Salisbury Road, Lymington Avenue and Alley Dock.

Other works in hand include the improvement and widening of Cliff Parade, and the widening of Leigh Hill for the improvement of this County Road.

### **Sewerage.**

Three thousand six hundred and sixty-eight lin. yards of gin. stoneware pipe sewer with bitumen and cement joints have been laid complete with all necessary manholes, pen-stocks and ventilating columns in the following ten private streets, viz. :—Westleigh Avenue, Marine Parade, Vernon Road, Ronald Hill Grove, Leigham Court Drive, Leighton Avenue, Oakleigh Park Drive, Dawlish Drive, Torquay Drive, Leigh Hall Road.

Several of the sewers, being in water logged ground, special care has been required to assure watertightness, as all excess of subsoil water means extra cost in trunk mains and at the Sewage Works in disposal.

Owing to the inadequate provision made by the riparian owners for the discharge of flood water from the natural drainage area of the district along Glendale Gardens flooding of lands and roads has occurred in this area, which has also resulted in the surcharging of the Council's sewerage system and flooding of property thereby in the lower parts of the town.



A scheme for dealing with this area has been submitted to the Council for consideration, but owing to the large initial expense no instructions have been given for the work to proceed.

As the streets on this watershed are made up and houses are built the discharge from the impermeable surfaces will increase and additional facilities for the discharge of storm water from this area will become a necessity.

Application has been made to the Local Government Board for a loan of £450 for the purpose of laying down a 24in. diameter storm water sewer to the Eastern Outfall, in lieu of the existing 12in and 15in. pipes which, owing to the growth of the district, are unable to deal satisfactorily with the storm discharge. Additional storm water facilities have also been provided on the Leigh Hill for dealing with excess of storm water.

There are at present thirteen miles one furlong of sewers within the district of sizes ranging from eighteen inches diameter to six inches diameter. The sewers are ventilated by shafts, all surface manholes being hermetically sealed. The heads of all sewers are regularly flushed. Generally the sewers have adequate fall and are self-cleansing—the exception being the High Street main sewer, eighteen inches diameter, with a flat gradient of one in 1,000, which requires special attention.

### **Sewage Works.**

During the present year the alterations, additions and renewals of the filtering material which has been proceeding for the past two years has been completed out of current rate.

The work consisted of—

- (1) Providing storm water reserve and sedimentation tanks.
- (2) Concreting the whole of the bacteria bed and filtration area—in lieu of the previous clay bottom.
- (3) Taking out the whole of the 4,800 cubic yards of burnt ballast filtering material, cleaning, cleansing and replacing, and providing new material in the shape of hard burnt washed clinker to make up deficiency.
- (4) Thorough under-drainage and aeration of beds by means of perforated channel pipes leading to a central and an end chamber,



- (5) Provision of a system of surface distributing channels.
- (6) Conversion of one bed into filtration area for final treatment of effluent, with the provision of regulating valves and pipes, with central humus chamber. This filter is novel in construction and specially adapted to meet the requirements of the site, which does not permit of the ordinary double contact. Your Surveyor has designed the arrangement which is the first installation of its kind laid down.

The Council will be interested to know that the provision made is in accordance in several respects with the conclusions set forth in the Fifth Report of the Royal Commission on Sewage Disposal, the following being some of their conclusions in regard to the treatment of sewage:—

- (a) “ We find that it is generally desirable to remove from the sewage by a preliminary process (tank) a considerable proportion of the grit and suspended matter before attempting to purify the sewage on land or filters.
- (b) “ Single contact will only yield a good effluent where the sewage to be treated is weak and then only after good preliminary treatment. For the treatment of a partially settled weak sewage, as well as for partially settled sewage of average strength, if the case is one in which a good effluent is required double contact is necessary; while if a strong sewage has to be treated, triple contact is necessary unless the preliminary treatment is exceptionally good.”

In regard to standard of effluent the following remarks are made:—

“ For the guidance of Local Authorities we may provisionally state that an effluent would generally be satisfactory if it complied with the following conditions—

- (1) “ That it should not contain more than three parts per 100,000 of suspended matter; and
- (2) “ That after being filtered through filter paper it should not absorb more than—
  - (a) “ 0.5 parts by weight per 100,000 of dissolved or atmospheric oxygen in twenty-four hours.
  - (b) “ 1.0 parts by weight per 100,000 of dissolved or atmospheric oxygen in forty-eight hours.



(c) " 1.5 parts by weight per 100,000 of dissolved or atmospheric oxygen in five days."

These are the only tests given, and could presumably be applicable to inland streams used by cattle for drinking, and should be more than ample for discharge into tidal waters.

(1) and (2) (c) are the standards already fixed for this Council by agreement with the Salvation Army with additional ammonia and nitrate tests.

The sewage treated at the works may be considered a strong domestic sewage with the addition of Gas Works liquor, which is allowed to go into the sewers. The effluents discharged may be considered very satisfactory. Steps have been taken to eliminate all sea water which has been proved to be prejudicial to the efficient working of the beds and conducive to the production of bad effluents.

The question of additional power for emptying the tanks from time to time and lifting sludge to an additional height has been under consideration and will require attention in the immediate future as the efficiency of the beds depends to a considerable extent on the periodic and regular cleansing of the tanks.

The advisability of cultivating a portion of the area of the land and planting shrubs around the works is one worthy of the future consideration of the Council.

### **House Drainage.**

A regular and systematic testing of new drains is carried out. The private drains are ventilated and all sinks, baths and lavatories trapped. This work is very necessary, and has, in my opinion, resulted to some extent in the reduction of the notifiable cases of infectious disease.

If householders would help the Council by periodically flushing their own private drains by discharging from time to time a tubful of water down the manhole provided to each house private drains would seldom be blocked, and could be regularly kept clean.

### **Buildings.**

During the past year a considerable number of new buildings have been erected, as the following figures will show :—



	1908	1907	1906
Dwelling Houses certified for Occupation...	97	69	70
Sets of Building Plans submitted .....	106	68	60
In respect of Dwelling Houses .....	125	98	
"    Shops .....	13	9	
"    Public Buildings .....	—	2	120
"    Alterations and Additions ...	14	6	
"    Other Buildings .....	26	11	
Totals .....	178	128	120

Amended plans—

Buildings 3.

Sewer 1.

A case of considerable interest, viz., the conversion of a railway carriage for use as a dwelling house has engaged the attention of the Council. So far the case has been successfully contested in the Courts, and it is to be hoped that the Council will be upheld in their contention in the interests of public health.

### **Recreation Grounds.**

The Council has come into possession of some area of land on the Leigh Park Estate, which is to be laid out during the coming year for public use as a Recreation Ground.

Instructions have also been given relative to the laying out and planting of the Cliff Recreation Ground, and the provision of one or more shelters.

### **Hospital Site.**

Six acres of land have been acquired for the purpose of Infectious Diseases Hospital in connection with which a Local Government Board Inquiry has been held.

### **Public Conveniences.**

The Council have erected a three-stall urinal for the convenience of the public on the Bell Wharf, and a public convenience with accommodation for ladies and gentlemen is being erected and will shortly be completed on the Cliff Recreation Ground. Both structures were the subject of a Local Government Board Inquiry.



### **Bathing Accommodation.**

Instructions have been given for the provision of bathing accommodation near the Cliff Bridge, which it is anticipated will be appreciated.

### **Cemetery and Mortuary.**

Arrangements have been made for the discharge of the drainage of the ditch adjoining the Cemetery into the Council's sewer in London Road. Additional walks have been laid down in the western side of the Cemetery.

### **Gas Work.**

One thousand and six lin. yards of new mains have been laid during the year. New purifier shed and purifiers have been erected. Land purchased for Gas Works Extensions has been enclosed and a sea wall constructed to surround a portion required for present purposes.

New Retort House, Exhauster and Power House and Chimney are in course of erection.

In connection with this work new Retorts, Exhausters, Condensers and Scrubbers are being installed, and instructions to proceed with the erection of a new gas holder have been given.

### **Public Offices.**

Plans for the erection of new Public Offices, Fire Station, and provision for a Town Hall are in course of preparation, the erection of which is expected to be proceeded with at an early date.

The year has been a busy one for your Surveyor and his staff, and there is every evidence that the coming year will be equally busy if not more so.

I am, Gentlemen,

Your obedient Servant,

JOHN W. LIVERSEDGE, Assoc. M. Inst. C.E.

*Surveyor to the Council.*