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Contributors

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1898.

ANNUAL REPORT

OF THE

Medical Officer of Health

FOR THE

TOWN AND PORT OF NEWHAVEN.

ARTHUR GEORGE MOSSOP, D.P.H.

Newhaven :

J. C. MACDUFF, PRINTER, NEWHAVEN, SUSSEX.

1899.

NEWHAVEN URBAN DISTRICT.

Public Hospital Admissions ..	...	0
Area ... ..	...	1,100 3 0
Number of Houses ... ..	...	1,080
Population—Census 1891 ... ..	...	4,739
Estimated middle 1898 ... ..	...	6,100
Rateable Value ... ..	...	£24,043 6 0

To the Newhaven Urban and Port Sanitary Authorities.

MR. CHAIRMAN AND GENTLEMEN,

Every year it becomes my duty in reviewing and reporting to your District Council the progress or otherwise of the Sanitary conditions of your town, to draw your attention to any circumstances which in my opinion may injuriously affect the health of the inhabitants, or to the neglect of any means or precautions which might affect them in a similar direction.

Sanitary progress has undoubtedly taken place within this town since I have held the position of Medical Officer of Health to your Authority, and this fact must be gratifying both to yourselves as well as it is to me; we have achieved, jointly, some measure of success already.

But whilst rejoicing at the amount of necessary work done, there is much, very much, left undone, among those improvements which I have already termed the "pressing necessities." I allude of course to the want of an Isolation Hospital, suitable Steam Disinfecting Apparatus, an Ambulance, and a temporary abode for housing the poor whilst disinfection of their homes is in progress (in certain cases this temporary accommodation is an indispensable adjunct to sanitary machinery). The temporary isolation of "suspects," *i.e.*, those persons who require to be isolated and under close observation for a short period of time, *viz.*, the incubation or premonitory period, during which an accurate decision as to the exact nature of their ~~possible~~ disorder cannot for the time being be in some cases arrived at, is most important.

A cottage, near at hand, and under the immediate supervision of the Isolation Hospital Staff, is (at least) necessary for this purpose and is not a costly undertaking.

I yearly reiterate these wants in my Annual Reports, not alone because it is my duty to the public and to the District Council, but also in order that every one may judge how difficult and impossible in many cases it is for me to deal satisfactorily with infectious disease if such necessary instruments are withheld from me, and again because I am fully alive to the serious straits we should all be in if a sudden and severe epidemic appeared in our midst, this is not a mere hypothetical proposition I am placing before you, it actually occurs, and frequently too.

Recently I attended (together with other members of this Council) a Conference with reference to this matter convened by the Sanitary Committee of the East Sussex County Council, and I trust some practical action will at once be taken as the outcome of

these deliberations. Although it has been truly said that of the making of books there "is no end," and although this is as it should be with advancing knowledge, yet here the simile must end so far as actual conference is concerned and practical effort should commence, let us make it, we must face the expenditure some day, why put it off?

I now pass to the consideration of another important and necessary step which has been taken this year with reference to the compulsory purchase of the Waterworks—a most progressive movement, and in the right direction.

Since that great epidemic of Enteric Fever which prevailed in Maidstone during the year 1897, which attacked some 1888 individuals and destroyed 130 persons (a very low mortality considering the magnitude of the epidemic), increasing attention has been paid to the necessity for a more complete and systematic supervision, inspection and control of public water supplies.

As the law stands at the present time a public health officer has no official right to enter upon the property of a private water company for the purposes of procuring a sample of water for examination although it is supplied by that company for the public's consumption, neither can he examine their premises. It is vain (as has recently been attempted when an accident occurred) to throw the onus for not having done so upon the shoulders of the Medical Officer of Health because of his supposed powers to take such steps under sections 91, 102 and 103, of the Public Health Act, 1875, and also the Local Government Board's Order, 1880, as to the duties of the Medical Officer of Health in this respect, neither do I believe any such systematic supervision, much less control, or advice was ever contemplated by The Board or any one else until the epidemic already alluded to occurred in 1897.

For if the companies in question gave their permission to the Medical Officer of Health to enter upon their "gathering grounds," if this land is not their own and they have only purchased the water rights, I am not at all sure that an officer could not be prevented from so doing by the land owner, for "way leave" usually extends alone to the company and its servants and not to the Health Officer.* We will now pass on to the consideration of some of the most important features of our present water supply.

Our Public Water supply chemically considered was by no means satisfactory during September and October. A very grave feature indeed is this unstable fluctuating condition compared with its normal standard.† Instability in the amount and the character of the chemical constituents of a drinking water should always be regarded with suspicion and no labour spared until the cause for this unsatisfactory feature has been ascertained.

* This latter difficulty has already arisen elsewhere.

† See Analyses of the Public Water Supply appended to this Report.

Comparatively speaking, large quantities of Nitrates and even free Ammonia may occur in a drinking water if these quantities are not fluctuating, and yet give rise to no mischief provided the strata or stratum of filtration is sufficient to prevent the more dangerous specific polluting matter reaching the water, but even this must be a source of anxiety with us, for any water derived from the chalk rock is always exposed to the risks of sudden pollution by reason of such pollution finding its way into a fissure within the chalk from a quarry or well tapping the spring, etc.

And herein lies the risk so frequently incurred (by those foolish enough to undertake it), in certifying on chemical grounds *alone* a water as pure and fit for drinking purposes, ignorant of the local surroundings of the service with regard to its:—

1. Relation to buildings, neighbouring wells, privies, rivers, and drainage or sewage disposal.
2. Geological features.
3. Collection, steining of wells, filtration, and delivery to the consumer by pipes, hydrants, storage tanks, and the multifarious fittings of a public water supply, etc.

▲ All these points will have to be considered in re-organizing a system of supply to this town in future.

Therefore it is in my opinion now an opportune moment to draw your attention to this matter in order that as few points may escape attention as possible when acquiring this important undertaking.

There are three steps which should be constantly taken in guarding a public water supply against accidental pollution :

1. A thorough inspection of all waterworks and gathering grounds, both at regular intervals of time and whenever it may appear desirable to the Medical Officer of Health is imperative, combined with this—accurate plans of the several details of the entire works, together with the distribution of the supply and the construction of the several fittings used, and allowed by a company to be used, should always be accessible to this officer and inspected by him.

2. A Chemical examination of the supply at frequent intervals (at least once weekly), and more often during the Summer and Autumn.

3. A Bacteriological examination fortnightly, or more frequently during July, August, September and October.

I have placed these safeguards in the order of their relative importance. You will notice I have advised more frequent attention to be paid to the examination of a water supply during the months of July, August, September and October. I do so for these reasons:—

- (1). Because a water supply is more liable to the risks of dangerous pollution during the Summer and Autumn; among the

many contributory factors to this increase are that more water is consumed, risk of insuction through imperfect fittings is greater, ball hydrants are liable to afford a means of admission of pollution during repairs and withdrawal of pressure from the mains, etc., whilst blocked drains overflowing during heavy thunderstorms distribute concentrated sewage broadcast in the neighbourhood of valve boxes and water fittings, which may be readily sucked into the mains during emptying and other variations in pressure occurring within the mains.

(2). Specific infecting material is now more abundant than in the colder months of the year, tramps are travelling all over the rural districts, diarrhœa is more common and probably often due to the ingestion of fæcal bacteria which have been conveyed to food by flies (for flies visit any filthy abomination and are readily drowned in a fatty emulsion such as milk, which they thus infect).

(3). The temperature of the water supply, combined with other circumstances, is probably more suitable for the rapid propagation of bacteria at this season than at any other.

(4). The dry fissured soil of the gathering grounds, combined with a sudden and occasional downpour of rain will now readily wash any surface pollution either directly into a spring or into the subsoil water and ultimately into the spring from whence a public supply is derived, producing thereby sudden and *abundant* infective pollution. Or such polluting materials may *slowly* dribble in and create what a soldier would term "a desultory firing," that is to say the more susceptible water drinkers would contract disease here and there, to be followed later perhaps by a general and widespread conflagration. Why I lay stress upon the dangers of surface polluting material reaching a water supply at this time of the year (as of course it can do at any time for the matter of that), is that the more I study the morphology and cultural characteristics and reactions of some of those bacteria which pass part of their existence in the bowels of human beings, the more I am inclined to believe that some at least of these organisms, which in the first place appeared to act benignly towards their host, suddenly by means of altered environment within or without the human body, acquire highly virulent properties when re-introduced into the alimentary canal of man. The action and re-action of food, temperature and environment upon the growth of the several varieties of *Bacterium coli commune* (a bowel bacteria) to my mind appears to support this view, which has been promulgated by Arloing, Rodet, Vallet, G. Roux, and more lately by Percy Adams, with regard to the so-called summer diarrhœa, infantile diarrhœa and its relation to outbreaks of enteric fever; the latter I believe holds these views with reference to the *Bacterium coli commune* and also as to the variability of *Bacillus enteritidis sporogenes* as associated with infantile diarrhœa. This research is of the greatest

interest to Newhaven, for unfortunately diarrhoea is the most prominent disease in our annual returns of infectious diseases. Thus the risks of insuction through faulty connections in our water service pipes is very important to us, for infective material is always with us and only requires a means of entry.

"The powder is always ready, given the means of ignition it will explode." These are not imaginary dangers, such disasters are constantly occurring.

As this Sanitary Authority contemplates the purchase and control of our local waterworks, they will have to possess some knowledge of the undertaking in its several aspects and not the least of these aspects will be its sanitary control, I have therefore thought it my duty to foreshadow *some* of the many points which you will have to consider.

Great prominence has recently been given to the questions of safeguarding the public from the fearful ravages of the disease commonly known as "consumption."

It is no fresh warning that has thus recently been sounded, Medical Officers of Health throughout this country, notably Ransome, Niven, and our neighbour Dr. Newsholme of Brighton, who are the pioneers in publicly dealing with this infectious disease, have for some years preached the gospel for its prevention.

But still we lack much in the effective control of infective persons and things with regard to this disease: milk and meat supplies, etc.

Few of us but must be alive to the reckless way some people look upon this infectious disease, for instance, the way in which persons expectorate, *i.e.*, spit about rooms and railway carriages, to afford opportunities in many cases for this infective material to dry and then to be whirled into the air, drawn into the lungs of some unfortunate individual recovering possibly from an attack of influenza, congestion of the lungs or what not, who thus becomes infected with consumption.

These poisonous organisms having now found a suitable entrance into the lung or elsewhere commence to grow at the expense and the ultimate sacrifice of their unfortunate host.

Again, so long as cows are housed in ill-ventilated sheds, amidst often filthy surroundings, and merely regarded as "*milk-producing machines*," with the attendant results that they become debilitated and often infected with consumption to ultimately pour forth infective milk which is consumed unboiled by infants and invalids, so long I say may we reasonably expect "consumption of the bowels" in infants, who even if they survive yield further tubercular material to commence the cycle of infection anew.

The same arguments apply, although not so strongly, to infected meat.

Thus the amount of meat which is smuggled into the smaller towns, and some big towns too, by unprincipled persons and known by them to be totally unfitted for food is simply appalling.

There is an excellent Public Abattoir at Brighton; why should we not insist upon all our meat being slaughtered under skilled supervision and each portion branded (as in Germany) with a special mark and date? it would cost neither the farmer nor the butcher a penny more and any extra fractional increase in price would be counter-balanced by the increased security afforded the consumer.

Finally, and before turning to a consideration of the customary statistical records appended to this Report, I would say that none of these proposed improvements would benefit Newhaven alone, their benefit would extend to a much wider area than the boundaries of our District Council, even, to the Port of Newhaven and to those who frequent it, as well as to the county at large. Under England's enlightened system of maritime sanitary control we establish no quarantine in our ports—which are open to all comers; we rely upon an efficient system of supervision of infected ships and passengers, and the isolation on shore of infected persons, together with the disinfection of the ships which carried them. For this purpose an isolation hospital, steam disinfecting apparatus and two ambulances are necessary, and in a double degree to us. We have at present none of these essential appliances, upon the proper use of which rest our chief means of combating infectious disease both from within as well as from without our town.

THE VITAL STATISTICS are calculated upon an estimated population for the middle of the year 1898, amounting to 6,100 persons as against 6,000 in 1897.

From out of this population there were

<i>Registered Deaths—</i>	<i>Males...</i>	40
“ “	<i>Females</i>	27
		—
		67

of these eight persons died in the workhouse, three in the town, one on shipboard, and two were bodies of persons not belonging to the town but found in the harbour, making in all fourteen deaths to be deducted from the above in order to get our corrected death rate, this leaves 53 deaths.

<i>Registered Births—</i>	<i>Males ...</i>	86
“ “	<i>Females</i>	90
		—
		176

of these two occurred in the Union which births must also be deducted, leaving a total of 174. Showing an excess of Births over Deaths of 121, which constitutes our natural increment of population.

The number of persons married were 34; so that the rates per annum per 1000 of the population were

Of Deaths	...	...	...	8.69
Of Births	...	...	...	28.53
Of Marriages	...	...	...	5.57

The death rate is extremely low and this is the more striking when we remember that a very large proportion of the inhabitants, such as sailors, quay hands, &c., earn their living by following dangerous occupations. Of course in a small population ~~such~~ *such as* this the death rate is liable to great fluctuations owing to what may be termed irregular causes, the presence or absence of a severe epidemic for instance of measles or scarlet fever would naturally make a great difference, but I feel I am justified in saying that our low death rate is in part due to the vastly improved sanitary state of our dwellings and modes of living. The death rate of England and Wales for the same period was 17.6. Calculated upon our population this represents a saving during the year of 54 lives. The greatest age at death was 87 years.

The Average Age at time of Death.				In Years			
	1898.		1897.		1896.		1895.
First Quarter	... 46.75	...	18.85	...	24.51	...	29.87
Second Quarter	... 39.18	...	39.75	...	42.00	...	27.30
Third Quarter	... 23.53	...	34.32	...	25.22	...	17.48
Fourth Quarter	... 33.22	...	38.12	...	48.70	...	36.33
<hr/>							
Whole Year	... 35.67	...	32.73	...	35.11	...	27.74

The infantile mortality was 103.46 deaths under one year per 1000 of the births; that of England and Wales for the same period being 160. In this town during the years 1897, 1896 and 1895, it was 138.55, 103.03 and 96.00 respectively.

For your further information I give the following table showing the Death and Birth rates at Newhaven during the last seventeen years.

Year.	Death Rate.	Birth Rate.
1882	... 17.00	
1883	... 19.03	
1884	... 19.31	
1885	... 18.38	
1886	... 19.86	
1887	... 15.42	
1888	... 19.39	
1889	... 15.05	
1890	... 15.79	
1891	... 16.16	... 33.34
1892	... 15.52	... 36.00
1893	... 15.82	... 34.18
1894	... 15.40	... 32.70

Year.		Death Rate.		Birth Rate.
1895	...	13.09	...	30.36
1896	...	14.60	...	28.52
1897	...	13.00	..	27.67
1898	...	8.69	...	28.53

Regarding the assigned causes of death, the following table gives these particulars.

Causes of Death.				Rate per 1000.			
				1898.	1897.	1896.	1895.
Seven Zymotic Diseases and other Zymotic Diseases ...				0.82	.66	2.60	1.27
Phthisis ...				.65	1.00	.52	.90
Cancer ...				.49	.5		
Other Constitutional Diseases ...				0.82	2.69	1.56	3.63
Diseases of the Respiratory Organs ...				.82	2.66	1.73	1.91
Diseases of the Organs of Cir- culation ...				1.15	1.33	2.08	1.45
Other Local Diseases ...				1.15	1.00	4.17	1.27
Developmental Diseases...				1.60	1.50	1.04	.90
Deaths by Violence ...				.33	1.00	.17	.90
Causes ill defined ...				.65	.66	.69	.90

I will now deal shortly with each of the constituent classes, commencing with the Zymotics.

Small-Pox was again absent.

Diphtheria was notified twice. The first case occurred on July 19th, in a child living at 51, Railway Road, the illness commencing the day after coming home from a visit to London, where undoubtedly the disease was contracted, no other cases of sore throat having occurred in the town.

The second case was reported on October 28th, and attacked a child living in the High Street, the disease was of a very mild type and I found it impossible to trace its origin. There were no other cases of sore throat and the sanitary state of the house was good.

Scarlet Fever was notified in four cases, the patients being young children.

The first case was reported on May 11th, at 2, Parkstone Villas. The second on May 14th, at 9, Sussex Terrace. The third on May 25th, at 10, Sussex Terrace, and the fourth on November 12th, at Lower Elphick Road. The origin of the first case was obscure; the second and third cases contracted the infection directly from the first. The cause of the fourth case could not be traced.

Typhoid Fever was reported to me six times; three cases proved fatal.

The first case occurred in Fort Road and was reported on January 20th. This patient visited at a house in Brighton where the sanitary arrangements were very defective. The second case was

notified on February 10th, the patient was a tramp and had arrived in the town ill two days before notification, and stayed at a common lodging-house. The third case occurred on February 15th, in the person of a lady who had been nursing the first case and doubtless in this way became infected. On April 12th the fourth case was reported at 12, South Road, and in this house there were grave sanitary defects, including a defective long hopper pan to closet without a supply of water for flushing, a D trap, no intercepting trap or ventilation of the house drain. On June 13th I found a man suffering from the disease in one of the common lodging-houses; as he was not at all bright intellectually and was noted for his unhealthy appetite (he was in the habit of eating any abomination offered him by others), probably in this way he contracted the disease. The sixth and last case was reported on October 25th, on which day the patient died.

Erysipelas was notified in fifteen instances.

Whooping Cough. The town has been remarkably free from this complaint.

Measles. A few isolated cases occurred of a very mild type. There are very few children who did not suffer from this disease in 1896, when we suffered a most severe epidemic.

Diarrhœa caused two deaths. *It was very prevalent during August and September, many of the cases being most severe more especially amongst the adult population.*

Influenza. Although a few persons only suffered from this disease it was characterised by its severity, and the recoveries were tedious and prolonged.

Phthisis claimed four victims.

In all cases of infectious disease disinfectants were most freely supplied without charge, the drains thoroughly and frequently flushed, and after recovery or death the rooms disinfected as efficiently as possible considering the very limited means at our disposal. Had not every precaution been taken we should have had a serious epidemic of Scarlet Fever, as since 1891 there has been very little of that disorder in the town, consequently there must be many children who are highly susceptible to the disease.

I had no reason to suspect the water, milk supplies or animals as having caused disease.

The Notification Act. The following is a summary of the notifications:—

	1898.	1897.	1896.	1895,
Scarlet Fever	... 4	... 0	... 9	... 10
Typhoid Fever	... 6	... 9	... 13	... 10
Diphtheria ...	... 2	... 0	... 3	... 3
Erysipelas ...	... 15	... 2	... 6	... 4
	—	—	—	—
	27	11	31	27

The following table shows how Newhaven stood with respect to Zymotic Disease when compared with England and Wales as a whole, or Urban or Rural England separately :—

Comparative Table of Zymotic Deaths per 1000 for the year 1898.

NEWHAVEN	...	...	...	·82
England and Wales	...	...	...	2·21
33 Great Town	...	...	...	2·83
67 Large Towns	...	..	...	2·41
England and Wales Rural	...	...	...	1·74

METEOROLOGY.

Rainfall.—The total during the year was 18·02 inches, this being 10·32 inches less than the average of the seven years 1885—1891. The amount which fell during the years 1897, 1896, 1895 and 1894, was 25·36, 24·87, 28·86, and 37·83 inches respectively.

Rain to the amount of 0·01 inch fell on 126 days (or on 30 days less than the average of the seven years, 1885—1891). During 1897 this amount fell on 132 days.

The greatest fall in 24 hours during the year was 1·13 inch on 29th October.

The greatest rainfall in one month was 3·07 inches in May.

The smallest rainfall in one month was 0·42 inch in July.

The rainfall during 24 hours exceeded one inch on one occasion only, namely on 29th October.

Barometer (at 9 a.m.)—The highest during the year was 30·70 inches, on 29th January.

The lowest during the year was 28·87 inches, on 25th November.

The mean height during the year was 30·04 (0·10 higher than the average of the seven years, 1885—1891).

Thermometer.—The mean temperature during the year at 9 a.m. was 53·17° (or 2·83° higher than the average for the seven years, 1885—1891).

The highest temperature in the shade was 85°, on the 25th August.

The mean maximum temperature during the year was 57·83° (or 4·66° higher than the the mean temperature at 9 a.m.).

The lowest temperature, 4ft. above the ground, 24° on 21st February.

The mean minimum temperature during the year, 45·91°.

The hottest month during the year, August; when the mean temperature in the shade at 9 a.m. was 66·51°; and the mean maximum temperature, in the shade, was 71·61°.

The coldest months during the year were February and March, when the mean temperature in the shade at 9 a.m. was 42·35°; and the mean minimum temperature was 38·28° for *February*, and 42·54° at 9 a.m., and 35·93° mean minimum temperature for *March*.

HYGROMETER (MASON'S).

The mean difference of Reading between Wet and Dry Bulbs during the year at 9 a.m., 2.70° (during 1897 the difference was 2.68°).

Analysis of Direction of Wind at 9 a.m.

	1898.	1897.	1896.	1895.	1894.
N.	18 ...	26 ...	31 ...	17 ...	12
S.	16 ...	25 ...	8 ...	23 ...	17
E.	9 ...	8 ...	22 ...	28 ...	9
W.	84 ...	51 ...	61 ...	29 ...	40
N.E.	71 ...	80 ...	70 ...	90 ...	96
N.W.	59 ...	47 ...	51 ...	40 ...	38
S.E.	29 ...	35 ...	22 ...	30 ...	28
S.W.	79 ...	93 ...	101 ...	108 ...	125
	<hr/> 365	<hr/> 365	<hr/> 366	<hr/> 365	<hr/> 365

Leap Year.

A Bill has been introduced by the two Urban District Councils of Newhaven and Seaford in pursuance of section 66 of the Water Company's Act of last year, which contemplates an endeavour to purchase the undertaking during the present Session. This Bill has been strenuously opposed on Standing Orders by the Water Company, but I am glad to say that only two allegations of non-compliance have been sustained out of twenty-four and the Bill is therefore not imperilled. The Bill contemplates supplying forthwith, in addition to the parishes already supplied by the Company, the parishes of Piddinghoe, Southease, Rodmell, Iford and Telscombe, all of which parishes have suffered severely from the want of water during the past summer. The Bill introduced last year was thrown out on Standing Orders, so that the merits of the scheme have never been before the Houses of Parliament, but Parliament recognising the importance of the Council's action gave them permission to re-introduce a Bill during the present session, which is perhaps more advantageous to the Councils as they have been enabled to ascertain more fully the wants of the neighbourhood and to prepare a more complete scheme. It was stated in the evidence last year as given by the Chairman of the Directors of the Water Company and by the expert witnesses, that the pumping station at East Blatchington would be given up. Notwithstanding this the Company did continue to pump up water for several consecutive weeks from this well, thus supplying the inhabitants of Newhaven with water containing a very large amount of chloride of sodium (common salt) per gallon.

Refuse Disposal.—The scavenging has been well done, all the receptacles being cleansed once a week, and the contents carted away from the town and used for brickmaking. No nuisance has

arisen therefrom. A number of old brick ashpits have been done away with and replaced by portable galvanized iron dust boxes.

From the Town Surveyor (MR. RAYNER, C.E.) I learn that the following work has been done.—

58 New Houses and Shops have been erected or are in the course of erection.

4 New Stores.

1 New Fire Station.

1 New Iron Building.

16 Houses and Shops have been undergoing alterations and additions.

41 Houses have undergone alterations in the matter of drainage with ventilation and disconnection from sewer.

Combined drainage has been carried out to 72 houses in Lukes Lane, Bishopstone Terrace, Chapel Street, Sussex Place, Providence Place, Lewes Road and East side.

A large number of houses have had various defects remedied by replacing the old bell and other traps with stonework gullies, and sanitary washdown pans in lieu of old hoppers. *ware*

The sewer in Bridge Street has been taken up and relaid with Sykes' patent pipes, and two new manholes built, the whole costing about £100.

Lawes' Avenue is about to be made up by the Council and taken over under section 150 of the Public Health Act.

In Church Hill a great improvement has been effected by the road being widened and putting in a new surface water culvert about 600 feet in length, with necessary manholes and Sykes' Patent Road Gullies.

Another improvement is that carried out by the widening of the junction of Fort Road and Chapel Street, and the building of a retaining wall, this costing about £180.

Sussex Place has been kerbed, channelled and metalled.

Chapel Street has been rekerbed, and channelled and paved, and the street in part made up with granite.

The timber urinal at the River Bridge has been removed and replaced with one built of brick, slate-lined, with cement bottom and water laid on.

The culvert on the Town side has been thoroughly cleaned out and is now in good working condition. That on the East side is receiving attention and it is hoped this will be in good condition shortly.

The low-lying sewer through the Ship Yard, River Bank, Chapel Street and Fort Road, has also received a large amount of attention, and the whole of the manholes are thoroughly cleaned out each week.

A report has been presented to the Council by the Surveyor on the whole of the Drainage of the Town, and several defects existing are being remedied.

An improved system of lighting the town is under the consideration of the Council, five of Marriages' lanterns with incandescent burners being now in use as a test.

The surface water from the roads is drained principally into old brick gullies which are very defective, and are being replaced with Sykes' Patent Street Gullies, the number placed in at the present time being 18.

The new ventilator in Meeching road which was erected in 1897 has caused a nuisance ; the Council have decided to add another length increasing its height to 45 feet, which we hope will remedy this.

During the months of January and May the houses in Bridge Street were again flooded with sewage owing to the sewer in Chapel Street being blocked with silt. It was found necessary, owing to the improper way in which it had been laid, to take the whole of the Bridge Street sewer up and relay it afresh. These defects in this sewer were fully dealt with in my last Annual Report. One of the greatest difficulties we have to contend with is that of the sewers becoming partially obstructed with road debris or silt. The remedy for this is to supply a separate system of sewers to carry off the storm water. Another and very grave defect is the fact that in many places our sewers are level or have virtually no fall and in others the fall is in the wrong direction, thus part of our sewage system becomes *tide-locked* during high tides. There are still many closets in the older property in the town without a proper water supply and the sooner this is rectified the better for all concerned ; in many of these cases the house drains become pipes of sewage deposit and not of disposal.

As I have mentioned before, much has been done for the sanitation of the town. When I was appointed Medical Officer of Health four years ago the sanitary condition of the town was in a most deplorable state and had we been visited by any grave epidemic of Typhoid or Cholera it would have decimated us before we could have got the upper hand. At that time there was hardly a house that possessed an intercepting trap or drain ventilation pipe, and the traps almost without exception were either defective D or bell traps, and the latter more often than not were without the bell. Again a large number of very defective drains passed directly beneath the houses without any concrete protection, very few of the closets had a water supply and frequently contained a broken long hopper pan. During the past four years all defective traps discovered have been replaced by efficient stoneware gullies. The majority of the house drains have been ventilated and disconnected from the sewer. All drains found passing under the houses have been taken up and relaid and embedded in concrete, long hopper pans replaced by others of a modern type, &c. ; still much remains to be

done and we cannot afford to relax our efforts in the slightest degree.

I have regularly inspected the Dairies, Bakehouses, Slaughterhouses and Lodginghouses, they were clean and generally in a fairly satisfactory state.

The following Sanitary Adoptive Acts are in force in our district, viz. :—The Public Health Amendment Act, the Infectious Disease (Prevention) Act, and the Infectious Disease (Notification) Act. The Model Bye Laws are now in force.

The Public Water Supply has again been well maintained as a constant supply. But I have received many complaints as to its taste and colour, and frequently found it to contain such a large amount of chlorine as to render it most unsuitable for drinking purposes. The water has been supplied from two wells, one of which is at Blatchington and the other at Norton. The former water contains by far the larger quantity of chlorine; when I have been able to obtain a sample of the Norton water *unmixed* with the other supply I have found it to be a purer drinking water, with about 2.50 grains only of chlorine per gallon.

I give below the results of my analyses made during the past year from which you will see how greatly the chemical features of the supply varied.

Colour in 2-ft. Tube.	Suspended Matter.	Smell at 100° F.	Lead, Cop- per, Iron & Phos- phoric Acid.	Hardness. (CLARK'S Scale).		Total Solid Residue.	Chlorine.	Parts per Million.		
				Before Boiling.	After Boiling.			Free Ammonia.	Albuminoid Ammonia.	Oxygen con- sumed (moist combustion)
February. Clear Pale Green...	None ...	None ...	None ...	23°	24°	69	26 This is equal to 42.84 grains of Chloride of Sodium.	.04	.02	.40
April. Clear Pale Green...	None ...	None ...	None ...	20°	18°	42	10 Equal to 16.47 grains of Chloride of Sodium.	.007	.14	.48
June. Clear Pale Grey...	None ...	None ...	None ...	17°	14.50°	22	3 Equal to 4.94 grains of Chloride of Sodium.	.00	.01	.40
July. Clear Pale Grey...	None ...	None ...	None ...	17°	15°	22	3 Equal to 4.94 grains of Chloride of Sodium.	.002	.03	1.00
August. Clear Pale Grey...	None ...	None ...	None ...	18°	15.50°	28	3 Equal to 4.94 grains of Chloride of Sodium.	.004	.03	1.00
Sept. 4th. Light Brown, Opaque...	Decided	None ...	None ...	9°	7°	109	51 Equal to 84.01 grains of Chloride of Sodium.	.00	.05	1.00
Sept. 23rd. Clear Pale Grey...	None ...	None ...	None ...	8°	6°	120	57.50 Equal to 94.75 grains of Chloride of Sodium.	.026	.09	1.25
Oct. 10th. Clear Pale Grey...	None ...	None ...	None ...	10°	8°	82	30 Equal to 49.43 grains of Chloride of Sodium.	.013	.02	.60
Oct. 24th. Clear Pale Grey...	None ...	None ...	None ...	12°	10°	38	15 Equal to 24.71 grains of Chloride of Sodium.	.01	.015	.50
Nov. 5th. Clear Pale Grey...	Trace ...	None ...	None ...	19°	16°	93	42 Equal to 69.2 grains of Chloride of Sodium.	.03	.01	.40
Nov. 18th. Clear Pale Grey...	None ...	None ...	None ...	17°	11°	64	22 Equal to 36.25 grains of Chloride of Sodium.	.006	.032	.50
Dec. 5th. Clear Pale Grey...	None ...	None ...	None ...	13°	10°	23	2.50 Equal to 4.12 grains of Chloride of Sodium.	.01	.01	.50
Dec. 18th. Clear Pale Grey...	None ...	None ...	None ...	13°	8°	23	2.50 Equal to 4.12 grains of Chloride of Sodium.	.00	.01	.40

Microscopic character common to all. No debris.

I tested the Public Water Supply daily for chlorine between October 25th and November 7th, and November 16th to 29th, with the following result :—

October	...	25.	26.	27.	28.	29.	30.	31.
Amount of Chlorine	}	49.	57.	57.	22.	51.	64.	34.
(grains per gallon).								
November	...	1.	2.	3.	4.	5.	6.	7.
Amount of Chlorine	}	32.	63.	25.	27.	56.	42.	39.
(grains per gallon).								
November	...	16.	17.	18.	19.	20.	21.	22.
Amount of Chlorine	}	9.	5.	3.	2½.	9.	3.	2½.
(grains per gallon).								
November	...	23.	24.	25.	26.	27.	28.	29.
Amount of Chlorine	}	2½.	2½.	2½.	2½.	2½.	2½.	2½.
(grains per gallon).								

I feel sure, as I pointed out in my report for 1896, that sea water finds its way very freely into the water supplied from the Blatchington well, especially during a drought.

During the past twelve months the health of the crews have been good, and no infectious disease has occurred in the Port. Vessels have been regularly inspected, the nuisances discovered were of a trivial nature and at once abated. During the small-pox epidemic at Middlesborough each ship from that port was visited by either the Sanitary Inspector or myself and the crews inspected. The passenger traffic to and from Dieppe was again heavy, 167,444 persons using this popular route as against 164,144 in 1897. During the years 1896, 1895, 1894 and 1893, the numbers were 165,279. 153,897, 123,322 and 112,000 respectively. During July, August and September, the number of *Inwards* passengers was 35,185 (this time being the most favourable for the importation of cholera).

Inwards for the whole year, 85,660.

The passengers to and from Caen for the year were 4,585. All passenger boats have left at the advertised time irrespective of unfavourable weather.

I acknowledge with thanks the kind assistance received from Capt. Lambert, Mr. Bedford and Mr. Davis.

I have the honour to be,

Mr. Chairman and Gentlemen,

Your obedient Servant,

ARTHUR G. MOSSOP,

Medical Officer of Health.