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REPORT
ON THE
HEALTH
OF THE
BOROUGH OF SUTTON COLDFIELD,
FOR THE YEAR 1895,

BY

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THE CITIES OF COVENTRY, HEREFORD, ETC., ETC.

MEDICAL OFFICER OF HEALTH.

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BOROUGH OF SUTTON COLDFIELD,

MEDICAL OFFICER OF HEALTH'S OFFICE,

January, 1896.

To the Health and Highways Committee.

MR. CHAIRMAN AND GENTLEMEN,

I have the honour to present to you my TENTH ANNUAL REPORT on the Sanitary condition of the Borough, and in order to render comparison with previous Reports as easy as possible, I shall adopt the same general arrangement and tabular forms.

AREA.

This is the same as last year, viz., 13,030 acres; and as there has been no alteration in Ward boundaries, the area is sub-divided as follows: Boldmere Ward, 1,051 acres; Hill, 2,907; Maney, 848; Trinity, 3,223; Walmley, 4,242; Wylde Green, 759.

POPULATION.

As I have before pointed out, a knowledge of the actual number of people living in the Borough is a necessity if vital statistics are to be of value. Unfortunately, in the past, the enumeration of the people has only taken place every ten years, so that in the years intervening between the census years the population is only an *estimated* one. In a town like Sutton any attempt at calculating the increase of population

is doomed to failure, because, owing to various reasons, the rate of increase is variable, and while in one decade the population increases but slowly, in another it rises by leaps and bounds. There is reason to believe that at the present time the increase is taking place faster than it has ever done before. As a guide to the probable population, I have obtained from Mr. Bibby, the Borough Accountant, the number of inhabited houses, as far as he can tell, and allowing for the same number of people per house as was found by the census in 1891, with one or two minor corrections, I estimate the population in the middle of 1895 to have been 10,500. This of course seems a somewhat high figure, but I have reason to believe that it is very near the fact. I cannot help again calling your attention to the question of the importance of a quinquennial census, and I hope you will see your way to press upon the Government the importance of extending this much needed reform to the provinces of England, as well as to the metropolis.

The following table shows the population divided among the six Wards :—

WARDS.	Area in Acres.	Population.
Boldmere Ward	1,051	1,867
Hill Ward	2,907	1,940
Maney Ward	848	2,300
Trinity Ward	3,223	2,000
Walmley Ward... ..	4,242	1,036
Wylde Green Ward	759	1,357
	13,030	10,500

BIRTHS.

209 births have been registered during the year—105 males and 104 females. This is 9 more than last year. Calculated on the estimated population the birth-rate is 19·90 per 1000, as compared with 20·00 for last year. This is again considerably below the average of the country at large, and of the other towns and districts in the county of Warwick; the rate in which for 1894 (the last year for which statistics are as yet available) was 27·60.

Six births were registered as illegitimate, compared with four in 1894 and eight in 1893.

DEATHS.

During the year 114 deaths—57 males and 57 females—have been registered in the Borough, compared with 112 in 1894 and 138 in 1893. One of the deaths registered occurred in a person not belonging to the Borough, while three deaths occurred in Aston Workhouse, in paupers removed from the town; so that the result of correcting the mortality table is to add 2 deaths to the total number registered as occurring in the Borough. According to the estimated population the death-rate is 11·04 per 1000, compared with 11·50 last year, and 15·7 in 1893.

The following table shows the Birth, Death, and Zymotic Rates for the past ten years :—

	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.
Birth-Rate	23·06	24·09	23·34	23·07	21·27	25·25	21·22	24·28	20·00	19·90
Death-Rate	12·63	14·88	10·78	11·31	11·94	18·60	13·4	15·7	11·50	11·04
ZymoticDeathRate	1·04	2·95	1·11	0·87	0·73	2·59	0·22	2·19	0·6	0·57

In the following table are shown the Birth, Death, and Zymotic Rates for the separate Wards of the Borough :—

WARDS.	Population.	Birth Rate.	Death Rate.	Zymotic Death Rate.
Boldmere	1,867	21·96	9·10	0·91
Hill	1,940	18·04	9·79	0·51
Maney.....	2,300	23·91	13·47	0·86
Trinity	2,000	11·50	10·50	0·50
Walmley.....	1,036	23·16	10·61	Nil.
Wylde Green.....	1,357	15·47	10·31	Nil.

From this it will be seen that the birth-rate was highest in Maney and Walmley and lowest in Trinity, the figure there being very low indeed, viz., 11·50.

The general death-rate was lowest in Boldmere and Hill, and highest in Maney Ward, but even in this ward it was below the average for either the urban or rural districts of the County of Warwick for 1894.

Of the 114 deaths 24 were in children under one year of age, and 10 in children between one and five as compared with 18 and 9 respectively in the previous year.

The following table shows at a glance the rates of Infant mortality :—

Annual Rate of Mortality.	Percentage of Deaths of Infants under One Year to Total Deaths.	Percentage of Deaths of Children under Five Years to Total Deaths.	Percentage of Deaths of Infants under One Year to Registered Births.
11·04	21·0	29·8	11·4

These figures, although rather higher than those of the preceding year are still markedly satisfactory, as the deaths of infants under one year to one thousand registered births are less than the average of either the urban or rural districts of the County in 1894, the figures being—Sutton, 114, County of Warwick, 123.

The following are the causes of infantile deaths registered:—Premature Birth, 3; Marasmus, 4; Inanition, 3; Diarrhœa, 2; Hydrocephalus, 2; Pneumonia, 2; Tuberculosis, 2; Atrophy, 1; Debility, 1; Stomatitis, 1; Whooping Cough, 1; Meningitis, 1; and Gastro-Enteritis, 1.

It will be seen from these figures that the bulk of the infantile mortality was due to causes over which sanitation has as yet no control, and that only 3 deaths were due to so-called Zymotic disease, viz., 2 from Diarrhœa, and 1 from Whooping Cough.

The next table shows the distribution of births and deaths in each quarter:—

1895.	Births.	Birth Rate.	Deaths.	Death Rate.	Zymotic Death Rate.
1st Quarter.....	41	15·60	34	12·92	0·38
2nd „	60	22·84	28	10·64	Nil.
3rd „	54	20·56	27	9·80	0·76
4th „	54	20·56	28	10·64	1·12

It will be observed that the birth rate was lowest in the first quarter and highest in the second, while the death rate was lowest in the third quarter and highest in the first. The higher death rate of the first quarter was entirely due to increased mortality from diseases of the lungs owing to the excessive and prolonged cold experienced in January and February.

I find that 28·9 per cent. of the deaths occurred in persons aged 65 and upwards, 35·9 per cent. in persons between 25 and 65, and 5·2 in persons between 5 and 25.

ZYMOTIC DISEASES.

Six deaths (the same number as last year) have been registered from the seven principal zymotic diseases, viz., Whooping Cough 4, and Diarrhœa 2. It will thus be seen and in my opinion, it is one of the most remarkable facts I have ever had to chronicle, that there has not been a single death from any of the zymotic diseases which are generally considered amenable to sanitary effort.

EPIDEMICS.

Whooping Cough was somewhat prevalent, particularly in the autumn, and 4 deaths resulted from it, but even this disease could at no time be rightly called epidemic, and it follows from my previous remarks, that no other disease in any way assumed epidemic prevalence.

SMALL POX.

I am again pleased to be able to state that there has been no mortality from this disease, and indeed only four cases have been notified. Of these, three occurred in Trinity Ward and one in Walmley. It is satisfactory too to record that in each case the origin of the disease could be discovered. Two of the cases were directly associated with the one noticed in my last report as occurring at the end of 1894, in fact they were (being respectively doctor and nurse) the only persons who had association with it. The other case in Trinity Ward was a very mild one, and the infection was imported from Willenhall. The only other case occurred at Walmley, and there can be no doubt that the infection was taken also from a case which had been removed to hospital in the previous December, a fortnight before. Two of the

cases were removed to hospital, the other two being isolated at home; and owing to all precautions being taken, no spread of the disease took place.

SCARLET FEVER.

Although fifty-one cases were reported, not one proved fatal. In the first half of the year only two cases occurred, one of which was sent from the Children's Hospital, and did not belong to the Borough. The other case possibly took the infection by means of letters from a house previously infected outside the town.

In the latter half of the year, particularly in September and October, cases were constantly occurring, and although nothing approaching an epidemic character was to be seen, still the Borough was never free from infection. It must be remembered that at this time Scarlet Fever was very prevalent not only in Birmingham but throughout the Midland Counties, so that the occurrence of a few dropping cases was indeed no matter of surprise. Maney and Trinity Wards shewed the greatest prevalence, but cases occurred in all the Wards of the Borough.

MEASLES.

Only eight cases were notified, while not one of these died. These figures compare favourably with the two previous years, when there were reported 60 and 380 cases respectively.

WHOOPIING COUGH.

Four deaths occurred from Whooping Cough, and probably therefore a somewhat large number of cases existed in the Borough during the year, but as notification of this disease is not compulsory, I have no means of knowing the exact number. The Inspector discovered that it was prevalent in Boldmere in the autumn. All of the deaths

occurred in children under five years of age, as is usually the case, indeed Whooping Cough is almost entirely a fatal disease to very young children, hence the importance of shielding infants from infection as long as possible.

DIPHTHERIA.

In my last report I said, "the number of cases notified (2) is the smallest number reported since 'Notification' has been compulsory." This year I am able to record a still further improvement, for not a single case has been notified in the Borough.

TYPHOID FEVER.

Five cases without a single death were notified, and of these, no less than three were imported from districts outside the Borough.

The other two occurred respectively in a child at Wylde Green, and in a woman at the back of High Street.

In the first case there was nothing insanitary in the state of the premises, and tap water was supplied; but in the second, although tap water was used, there had been previously a stopped drain near the house, and this possibly may have been connected with the case. The necessary work was carried out to remedy all defects.

DIARRHŒA.

Only two deaths from this disease, both in young children, were registered, and I have no reason to believe, that they were due to any insanitary condition. I only mention them because diarrhœa is counted as one of the seven principal zymotic diseases by the Registrar General.

INFLUENZA.

Not a single death was registered as due to influenza, while the number of deaths due to diseases of the respiratory organs was only nineteen, which is the smallest number recorded since 1890.

SANITARY CONDITION AT THE END OF THE YEAR.

Only two cases of infectious disease were known to exist in the Borough at the end of the year, and there can be no doubt that thanks to the continuation of the forward policy of your Committee, a still further advance in the sanitary condition of the town may be recorded.

AN ACCOUNT OF ENQUIRIES MADE AS TO CONDITIONS INJURIOUS TO HEALTH, AND OF THE PROCEEDINGS ADVISED; ALSO, AN ACCOUNT OF THE SUPERVISION EXERCISED OVER PLACES AND HOUSES WHICH THE SANITARY AUTHORITY HAVE POWER TO REGULATE, WITH THE ACTION TAKEN IN REGARD TO OFFENSIVE TRADES.

In every case where a nuisance has been reported or has been suspected, or where the existence of infectious disease has been notified, the premises have been visited at the earliest possible moment by the Inspector, and, wherever necessary, I have personally visited and advised on those conditions which required remedying.

NOTIFICATION.

As in previous years, the Act has worked admirably, and in 1895, seventy-one cases were notified by medical practitioners, compared with eighty-one in the previous year. The cases notified were as follows:—Small Pox, 4; Scarlet Fever, 51; Croup, 1; Typhoid Fever, 5; Erysipelas, 2; and Measles, 8. The cost of this notification was £8. 17s. 6d. compared with £10. 2s. 6d. in 1894, and £50 in 1893.

ISOLATION.

Twenty-four cases were isolated in Hospital, viz.: Small Pox 2, and Scarlet Fever 22. The town is, I consider, to be congratulated on the arrangements made with the Aston Local Board, whereby all responsibility for the

reception and treatment of the cases is removed from its shoulders. There can be no doubt that the popularity of the hospital is increasing, and indeed applications are sometimes made for admission when I do not think it necessary for the rates to be burdened with the attendant expenses.

DISINFECTION.

The Inspector reports that he disinfected no less than 44 houses, compared with 16 in 1894, while in addition 21 loads of bedding and other articles were sent to the disinfecting station.

SCHOOLS.

I can again report that no closure of any of the Public Elementary Schools has been necessary, nor have I thought it desirable to have any of them disinfected. This is a matter for congratulation, as the closing of a school tends to dislocate to a large extent the educational machinery of the district.

SEWAGE AND REFUSE DISPOSAL.

The Borough Surveyor (Mr. Marston) has sent me the following in reference to this subject:—

“The past year has not been one of great activity as regards sanitary improvements actually carried out, but rather one of preparation for works to be carried out this year. The completion of the Boldmere outfall sewer, the making up of Newhall Street, Queen Street, Upper Clifton Road, and part of Green Lane, are necessary works for which arrangements are being completed.”

In addition he says:—

“The sewer at Hill has been put in order and made available for the drainage of the village. A new sewer has been constructed at Minworth Greaves, and some small extensions and improvements have been effected in other districts. Seventy houses have been drained into the public sewers in various parts of the Borough. A new surface water drain has been constructed from High Street, and others at Minworth Greaves, Wylde Green, and Hill.”

I am also glad to hear that there is a probability that something will be done in the way of scavenging in the year 1896. I have deemed it my duty in the past to call your attention to this matter, and I again desire to record the opinion that the removal of house refuse, in the central portions of the Borough at least, is the most pressing sanitary problem awaiting your solution. You have adopted a system of sewers commensurate with the importance of the town, by which, over a large portion of it, the water carriage system is carried out, and it is a corollary to this that I urge the early and regular removal of other household refuse, so that the last lingering evils of conservancy of filth may be banished from the populous districts.

WATER SUPPLY.

I have analysed seven samples of water, six of which were from private wells, and with one exception all were more or less polluted. A sample was submitted of the tap water after private filtration, and, as is often the case, it showed evidence of much greater pollution than the tap water before filtration. It is no longer a secret that the ordinary domestic filter, as it is commonly constructed and used, is a means of contamination rather than of purification of the water passed through it.

OVERCROWDING.

The Inspector reports five cases of overcrowding, one at Boldmere, one in Mill Street, one at Reddicap Heath, one on Whitehouse Common, and one at the Reddicroft. All were abated on statutory notice without recourse to legal proceedings.

SLAUGHTER-HOUSES.

The Inspector reports that he has made twenty-four visits to slaughter-houses, and has found them generally satisfactory. He called my attention to one case in High St.,

where, owing to a change of occupancy, certain structural alterations were to be effected. I insisted on certain improvements being carried out, and my wishes were complied with.

DAIRIES AND COWSHEDS.

The Inspector reports fifty visits to Dairies and Cowsheds, and that with the exception of requiring lime-washing in a few cases, they were in a satisfactory state.

ADULTERATION OF FOOD.

Sixty-six samples were taken by the Inspector under the Sale of Food and Drugs Act, and submitted to me as County Analyst. Only one of these proved to be adulterated, viz., a sample of milk which was deficient of twenty per cent. of its natural fat. It will be seen, therefore, that the high character of the food supply of the Borough has been maintained during the year.

NEW BUILDINGS.

Mr. Marston, the Borough Surveyor, writes me as follows :—

“Plans were approved during the year for 78 new houses, and 28 additions and alterations to existing buildings which included Boldmere Church and the Provident Dispensary. There was a considerable falling off in the number of plans passed in the early part of the year, due no doubt to the severity of the weather, and the year's total shows a proportionate decline; the average was however well maintained during the last six months.”

METEOROLOGY.

Mr. Marston has favoured me with his observations (taken at the Borough Station) of the temperature and other meteorological records, and these will be found in tabular form in the appendix. He also writes me as follows :—

“The Rainfall gaugings showed an excess of 2.92 inches over the average of the previous six years, but the total was less than in 1889 and 1891, by 1½ inches.

The amount of Sunshine, recorded by a Jordan instrument, was slightly in excess of the average, but less by nearly 300 hours than 1893. The mean temperature was 1.7° below that of last year, and 2.8° below 1893; it was also $.9^{\circ}$ below the average of the last six years, while the relative humidity of the atmosphere was 1 per cent. drier than the average for the same period. The year has been chiefly remarkable for the long and severe frost which occurred during the months of January and February; and for a gale of wind of unusually high velocity which swept over the district on Sunday, 24th March, and caused a very large amount of damage to buildings and trees. Evidence of the remarkable power of the wind is afforded by the facts that in Sutton Park alone 635 trees were destroyed. 555 of them being torn up by the roots; several houses in the Borough were unroofed, while chimneys and gables were blown down in all directions, all within the space of an hour. The frost commenced on 28th December, 1894, and continued with more or less severity until the close of February. The point of greatest intensity was reached on 8th February, on which day the minimum temperature was 1.0° in the screen, and 10° below Zero on the grass. On 10th January, the highest temperature recorded during the day was 22.8° , and on the night of the 11th the minimum thermometer in the screen registered only 7.6° , and that on the grass 2.1° below Zero. Outdoor work was suspended for nearly two months, water mains were frozen up and burst, surface water gullies were blocked with ice, and in one district a sewer became frozen up.

SPECIAL REPORTS.

One such report was made by me and forwarded to the Local Government Board and County Council. It referred to the poisoning by soup of a large number of people at Wylde Green, and as the matter is of considerable interest, I append a copy of the report with certain other information which afterwards came to light.

GENERAL SANITARY WORK.

The Inspector has handed me in tabular form his report of the work carried out by him, and this shows the work has been carried on in the usual satisfactory manner and without friction.

CONCLUSION.

In concluding the tenth Annual Report which it has been my privilege to make, I desire to take the opportunity

of again calling attention to the wonderful health records of the town. Notwithstanding the rapid increase of population, the public health continues to improve. The records of 1895 are, as regards infectious disease, almost unique, for there has not been a single death from Small Pox, Scarlet Fever, Diphtheria, Typhoid Fever, or Measles. This happy state of affairs cannot, of course, be entirely ascribed to the sanitary condition of the Borough, but it is no exaggeration to state that the wise and liberal policy of prevention which has characterised your official work since the incorporation ten years ago, has borne fruit, so that the ratepayers may feel that the expenditure has not been in vain.

If this policy (of which I have no doubt) be continued, there is not the least reason why the Royal Town should not maintain its position in the future, and be regarded by the dwellers of less favoured places, as a veritable sanatorium. I take this opportunity of again tendering my best thanks for the courtesy I have received from the Committee and my colleagues.

I have the honour to remain,

Your obedient servant,

A. BOSTOCK HILL, M.D., D.P.H. Camb.,

Medical Officer of Health.

SPECIAL REPORT.

BOROUGH OF SUTTON COLDFIELD,

MEDICAL OFFICER OF HEALTH'S OFFICE,

14, TEMPLE STREET, BIRMINGHAM.

To the Health and Highways Committee.

Mr. Chairman and Gentlemen,

I beg to report that my attention was called on the 1st of January to an outbreak of poisoning among certain of the inhabitants of Wylde Green Ward, which was locally attributed to the consumption of soup which had been gratuitously distributed by the proprietors of the Wylde Green Hotel. Some of the soup was given to the Inspector of Nuisances, who submitted it to my inspection, together with some of the meat from which it had been made, and some pearl barley which had also been used in its preparation. Pea flour and vegetables were also contained in it. I made a toxicological examination of the soup and other articles to discover if arsenic or other mineral irritant was contained therein, but the results were entirely negative. I then investigated the outbreak on the spot, and found that about one hundred persons, all of whom had partaken of the soup, had been affected. There is not the slightest doubt that the poisoning was due entirely to the soup.

On enquiry I found that the soup was made from a large piece of salted beef, which had been boiled to make the stock, to which the other ingredients had been added. The broth in which a rabbit had been boiled was also added, but the rabbit was eaten at the hotel for dinner on the previous day, without any symptoms of poisoning. It was first suggested

that arsenic had accidentally found its way into the soup, but its absence and that of other metallic poison disproved this theory. It was also stated that the poisoning had been caused by the soup having been made in "a copper" which was not clean. The so-called copper was made of iron, and as far as enquiries can show, it had been used previously for boiling clean water only. It was rumoured that a hare which was high had been put into the soup, but I am assured by the landlady that this was not the case, and as a matter of fact, she has not had a hare in the house for months. The symptoms were also ascribed to the fact that saltpetre had been used too freely in making the brine; but in my opinion this is absolutely untenable, because the quantity required to be toxic in eighteen gallons of soup would be several pounds at least, and the supposition that this was present is absurd: besides other pieces of beef were pickled at the same time in the same brine, and no symptoms of poisoning have been reported by the consumers of these. As was to be expected, a great number of other theories to account for the outbreak have been propounded, but only one, to which I am indebted to a gentleman who took the trouble to write me on the matter, is worth consideration. He called my attention to the fact that three outbreaks of poisoning among horses had come to light due to the presence among peas of the Indian Vetch (*Lathyrus sativus*), and suggesting the possibility of the pea flour used to thicken the soup containing this. On enquiry I find that the pea flour was not home made, but was bought in packets at a neighbouring shop, and as no other similar attacks have occurred in the neighbourhood it is very unlikely that it was the cause of the outbreak. In addition to this, while, as far as I know, no cases in human beings of such poisoning have been reported, in the case of horses the symptoms are not those of gastro-intestinal irritation, but are referable rather to the nervous system. When the soup was

submitted there was no sign of decomposition, while I found that the cold beef, which appeared of the finest quality, was being eaten for at least ten days after the soup was made without any symptoms of poisoning.

I am indebted to Dr. Donovan, of Erdington, and to Mr. Fosbroke Hobbes, of Sutton, for a description of the symptoms they observed; while I have myself also visited and made enquiries from a large number of the sufferers.

The chief symptoms have been pain, swelling of the abdomen and purging, followed in some instances by vomiting. The purging generally lasted a considerable time, in some instances many days, despite medical treatment. Great coldness, with pains in the limbs (said to be in the bones by the patients) were complained of in many instances, and in one case, a child nine years old, was unable to use his legs sufficiently to walk for many days after the onset of the first symptoms. I found that the symptoms in nearly all cases did not come on for many hours, in some as long as thirty after taking the soup: and this, in my opinion, contradicts the presence of any form of mineral poisoning. Experience of similar outbreaks led me to believe early in the case that the effects observed were due to the presence of ptomaines or other substances generated from animal matter. I found the sanitary arrangements of the Hotel good, the water being supplied from the mains of the South Staffordshire Waterworks Co., while the place is drained into the public sewer, the work being carried out under the supervision of the Borough Officials. A careful consideration of all the circumstances appeared to point to the fact that the soup had become toxic independent of the meat from which it had been made, and on enquiry I found that the soup was prepared on the Friday afternoon and left standing in the boiler, loosely covered till about eleven o'clock on Saturday morning.

This boiler is placed in an outhouse, which is under the same roof as a stable, and separated from it by a wooden partition, in which there is a door. On the floor of the stable there is a drain grating. It is possible, therefore, that contamination of the soup with foul air may have occurred in this way.

I also observed that the ventilating pipe of the house drain runs up the end of the outhouse, near the boiler in which the soup remained all night, while about twenty feet away, and up the side of the Hotel itself, there is a large ventilating shaft connected directly with the main road sewer.

It is a well known fact that under certain conditions, there is a risk of sewer gas from a ventilator near a chimney being conveyed down the chimney into the interior of the house. I have heard of one case in this Borough where the tenant of a house up which a sewer ventilator is carried, complains of the smell coming down the chimney, so much so that he has stopped up the flue; while in my own house, on two occasions during the present winter, I have noticed smoke from another chimney coming by a down draught into a room in which there was no fire, in each case in the evening, although the chimney had a good draught when there was a fire burning in the room.

These facts then may, I think, throw some light on the matter. It is quite likely that on the Friday night sewer gas was discharged from the sewer ventilators, and as this became colder, it would become heavier, and therefore fall, if not rapidly diffused. This being so, it is highly probable that some of it descended the chimney of the outhouse and gained access to the soup in the boiler, and in this way started septic change. It is, of course, impossible definitely to say that this was the case, but bearing in mind that the symptoms point to the poison being septic or of animal origin, I cannot

at the present time, discover a cause more likely to have produced the outbreak.

I have the honour to remain,

Your obedient servant,

A. BOSTOCK HILL, M.D., D.P.H. Camb.,

Medical Officer of Health.

Since the above was written, owing to the death of one of the sufferers, an inquest was held and a portion of the soup which had been kept was forwarded to Dr. Klein for bacteriological examination. His report was as follows :

“ On January 24th, I received a glass jar of fluid material, tied with a membrane. The material in the jar had, on opening, a sour smell, and gave a strong acid reaction. It was a thick film, containing various vegetables, fat, and bits of flesh. Under the microscope, besides these substances, there was seen a multitude of microbes ; in fact, the whole material was crowded with them. Amongst these could be recognised various forms of bacilli differing from one another in length, and numerous yeast cells. Cultivations were at once made, so as to isolate the microbe. These cultivations yielded the following microbes in colonies : (1) Torula or yeast, very copiously present ; (2) A short non-mobile bacillus, not liquefying gelatine, fairly abundant ; (3) A bacillus, which proved on sub-culture to be closely related to the typical bacillus coli—this microbe is the normal inhabitant of man and animals, and is a prominent microbe in sewage ; in the soup it was present in considerable numbers ; (4) A bacillus which also proved on sub-culture to be closely related to the bacillus coli, but must be considered as a variety of the typical bacillus coli. It is also a normal inhabitant of sewage, and was present in enormous numbers in the soup. Experiments were made with the soup and with the cultivations obtained from it :—(a) Feeding mice with the soup produced no ill effect ; this result does not prove much, since the time that had elapsed since the consumption by human beings at Wylde Green and the experiment made here was considerable, and as it is known that organic substances, poisonous at one time, lose their action when exposed to fermentative changes ; (b) Inoculations of guinea pigs with cultures of the microbes (3) and (4), bacillus coli and variety, proved these microbes to be

virulent, particularly microbe (4), which is highly virulent; (c) Inoculation of guinea pigs with microbe (1) and (2) had no ill effect; (d) Microbe (4) multiplies extremely rapidly in beef-broth kept at body temperature, that is, about 37 degs. C., which turned the broth very turbid in twenty-four hours, the broth being filled with microbes. In addition, there are present by this time numerous flocculi entirely made up of the bacilli. If the broth culture is subjected to filtration by which these bacilli are separated from the fluid, and this latter is injected in small quantities (0.5 c.c.) into guinea pigs, it is found that they die in from six to eight hours under symptoms of acute poisoning. From this it is then clear that this microbe is capable of rapidly forming in the broth a poisonous chemical substance. In conclusion, from the foregoing observations the following conclusions can be drawn. (1) The soup contained microbes which were derived from sewage, and it is thereupon highly probably that the soup had been polluted with sewage. Amongst the microbes present in the soup the bacillus mentioned as a variety of the bacillus coli is possessed of virulent properties on account of its extremely rapid multiplication at the body temperature, and the poisonous substance it elaborates. It is most probable that this microbe caused the consumers of the soup the ill effects and the disease. This bacillus, it will be remembered from the foregoing paragraph, was present in the soup in enormous numbers.'

This report of Dr. Klein's was not made public for over a month after I had made my investigations, and had reported upon them to the authority and to the Local Government Board, and it certainly seemed to give some amount of proof to the theory which I formed as to the poisoning being due to contamination with gas from the main sewer ventilating shaft; but it must be borne in mind that the report recently made to the London County Council by Parry Laws and F. W. Andrewes seemed to negative the possibility of micro-organisms which are found plentifully in sewage being also found in sewer-gas emanating from manholes or other forms of ventilation. With this in my mind, I made further investigations therefrom into the possibility of pollution of the soup with liquid sewage, either intentionally by some evil-disposed person, or accidentally by leakage from some pipe or otherwise.

It will be remembered that the soup was left standing in

a kitchen boiler for about eighteen hours, and I found that everybody in the house who had access to this outhouse had suffered considerably from symptoms of poisoning; therefore it is very unlikely that any of these persons had contaminated wilfully the soup with sewage matter. The position of the boiler, the top of which is four feet from the ground, renders it unlikely that it would have been accidentally polluted with such matter; while the fact that there is no room above it, and no pipe conveying sewage above it, seems to render it impossible that pollution would have been effected accidentally in that way. Further, a consideration of the report of Messrs. Laws and Andrewes, while instructive as to the absence of microbes in the sewer air which they investigated, is by no means instructive as to the condition to be found in the sewer at Wylde Green. More than twenty years ago Frankland and others have pointed out that liquids running smoothly in channels give off very little solid matter in the air in contact with them,—but on the other hand if there be any obstruction caused, so that bubbling results, or if fermentation causes the formation of gas and the disengagement thereof, then by this process solid particles in the liquid are conveyed into the atmosphere above it. It is quite, therefore, in accordance with what one would expect, that the air of London sewers should be particularly free from microbe life, because the sewers run smoothly, the quantity of liquid is large, and the sewers are free from deposits.

But what are the conditions to be found in a comparatively small pipe sewer at a very low gradient, and which generally gives forth emanations of an offensive kind? To fully answer this question, it will be desirable to consider why a sewer gives out smell.

It is a well-known fact that fresh sewage has practically no odour, and it is only when it has become stale, or in other

words, putrescence has become advanced, that unpleasant odours are noticed. When, therefore, a sewer smells, it is a sign that it is not conveying what it was intended to convey, viz., fresh sewage, and that the odours are produced by putrescence, the result of stagnation and deposition of offensive matter. This condition is likewise accompanied by a disengagement of gases, the result of decomposition and fermentation; so that providing we have a stinking sewer, we appear to have just those conditions which are capable of giving to the atmosphere of the sewer solid matter, including micro-organisms with which the sewage teems. The sewer at Wylde Green has been for years notoriously a stinking one. To obviate the nuisance caused to residents and those travelling along the road, the crown ventilator at this part of it was stopped up, and by permission a large six-inch shaft was erected against the wall of the hotel. That gases of an offensive kind were given off from this I know to be the case, because nuisance had been complained of by the proprietress of the hotel in one of the rooms close to where it was fixed; and to obviate this nuisance a register grate had been put in, so that the evil smelling gas might be shut out from the room.

I have previously remarked that the night was a cold one, so that the sewer gas coming from the top of this shaft would become heavier as it cooled, and would thus tend to sink lower in the atmosphere, and my belief is that this sewer-gas in question did gain access to the outhouse by way of the chimney, and that in this way the soup was contaminated with those micro-organisms which were found by Dr. Klein. I do not by any means lay this down dogmatically, but after a very careful consideration of all the local conditions, I see no method more likely of contamination of the soup with the micro-organisms of sewage.

A. BOSTOCK HILL.

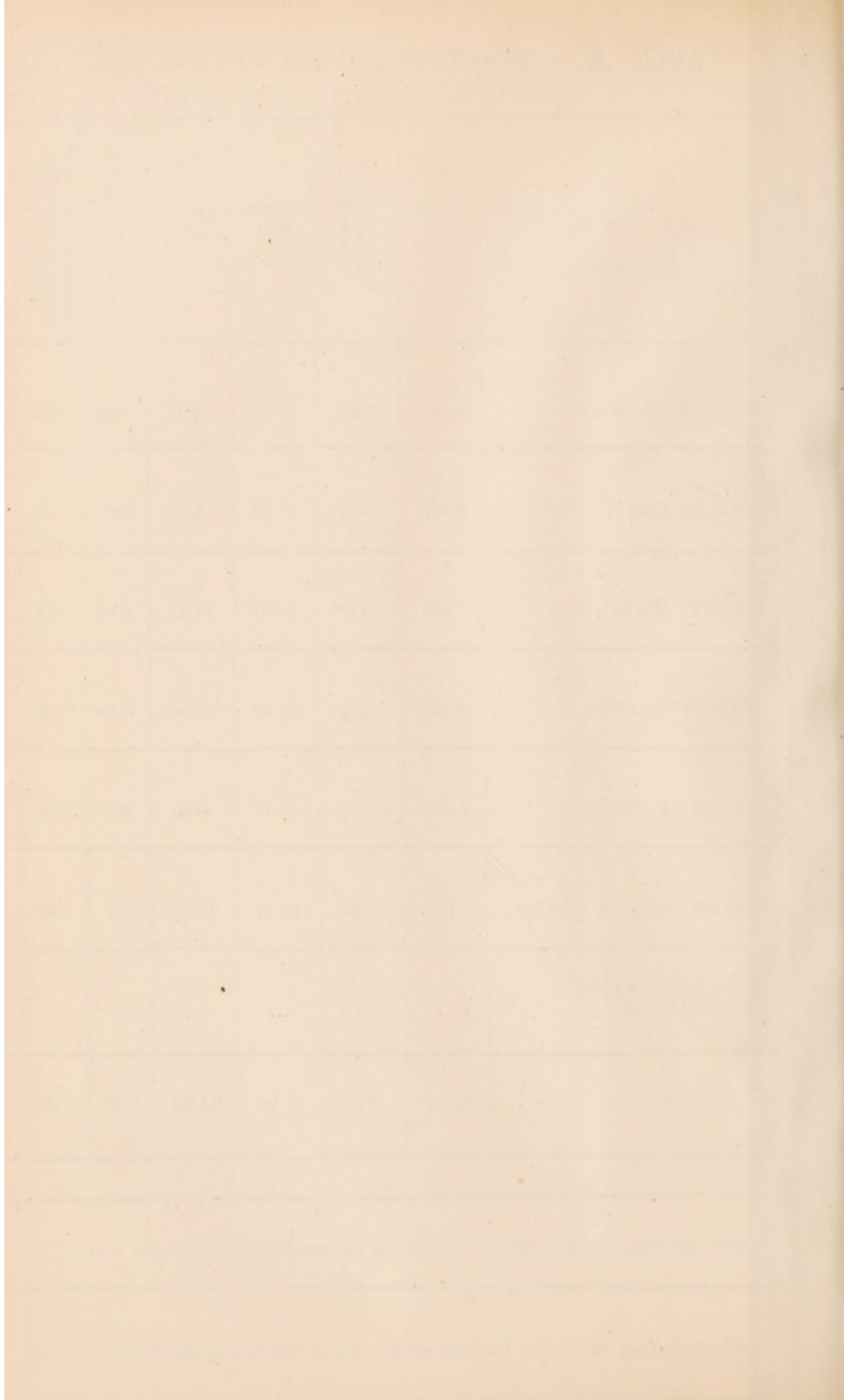


TABLE C.

WATER: RESULT OF ANALYSIS, EXPRESSED IN PARTS PER 100,000.

No. of Water.	Locality.	Date.	Total Solid Matter.	Ammonia free.	Ammonia organic.	Nitrogen as Nitrates or Nitrites.	Chlorine.	Remarks.
1	Minworth Greaves	Feb. 11th	128	0.092	0.076	1.1	9.3	Complaint made to Inspector
2	Chester Road	" 13th	28	0	0.022	0.11	2.2	Do.
3	Whitehouse Common	June 17th	88	0.001	0.008	2.31	8.9	Do.
4	Ditto	" "	100	0.120	0.018	3.41	12.6	Do.
5	Manor Road	" 28th	68	0.002	0.010	2.2	4.8	Do.
6	Tudor Hill	July 30th	28	0.016	0.014	0.44	2.1	Sore throats occurred here
7	Walmley	Aug. 10th	34	0.010	0.020	0.66	3.1	Complaint made to Inspector

TABLE D.

SUMMARY OF SANITARY WORK DONE IN
THE INSPECTOR OF NUISANCES' DEPARTMENT
DURING THE YEAR 1895.

DESCRIPTION OF WORK PERFORMED.				Inspections and Observations made.	Formal Notices by Authority.	Nuisances Abated after Notice.
Dwelling Houses and Schools	{	Foul Conditions	8	4	4
		Structural Defects	26	13	13
		Overcrowding	10	5	5
		Unfit for Habitation
	Lodging Houses ... ..	...	...	...	...
	Dairies and Milkshops ... ..	...	20	...	...
	Cow Sheds ... ..	...	30	...	...
	Bakehouses ... ..	...	19	...	...
	Slaughter-houses ... ..	...	24	...	...
	Canal Boats ... ..	...	...	...	...
	Ashpits and Privies ... ..	...	56	20	20
	Deposits of Refuse and Manure	...	14	7	7	
	Water Closets ... ..	...	18	18	18
	House Drainage	{	Defective Traps	10	5
No Disconnection	2	1	1
Other Faults	30	15	15
Water Supply ... ..		...	18	7	7
Pigsties ... ..		...	20	10	10
Animals improperly kept ... ..		...	10	10	10
Offensive Trades ... ..		...	4	1	1
Smoke Nuisances ... ..		...	10	2	2
Other Nuisances ... ..	...	17	4	4	
Totals				346	112	112

TABLE **D**—Continued.

DESCRIPTION OF WORK PERFORMED.	Nos.
Seizures of unwholesome Food ... ..	...
Samples of Food taken for Analysis	66
„ „ found Adulterated	1
„ of Water taken for Analysis	7
„ „ condemned as unfit for use	5
NOTE.—Where an inspection or notice embraces more than one defect, it may be enumerated separately as regards each such defect.	
PRECAUTIONS AGAINST INFECTIOUS DISEASE.	
Lots of Infected Bedding Stoved or Destroyed	21
Houses Disinfected after Infectious Disease	44
Schools „ „ „ „ ... ..	...
Prosecutions for not Notifying Existence of Infectious Diseases ... ..	...
Convictions „ „ „ „ ... ..	...
Prosecutions for Exposure of Infected Persons or Things ... ..	...
Convictions „ „ „ „ ... ..	...

N. DEEKS,

Inspector of Nuisances.

TABLE E.

PROCEEDINGS TAKEN UNDER THE SALE OF FOOD AND DRUGS
ACTS, 1875-9.

DESCRIPTION OF SAMPLES TAKEN FOR ANALYSIS DURING THE YEAR.

NO.	DATE.	ARTICLES.	REMARKS.
1	Jan. 21st	Milk.....	Genuine.
2	" "	Milk.....	Genuine.
3	" "	Milk.....	Genuine.
4	" "	Milk.....	Genuine.
5	" "	Butter.....	Genuine.
6	" "	Butter.....	Genuine.
7	" "	Butter.....	Genuine.
8	" "	Lard	Genuine.
9	Feb. 14th	Milk	Genuine.
10	" "	Milk	Genuine.
11	" "	Milk	Genuine.
12	" "	Coffee	Genuine.
13	" "	Mustard	Genuine.
14	" "	Oatmeal	Genuine.
15	" "	Tea	Genuine.
16	Mar. 14th	Milk	Genuine.
17	" "	Milk	Genuine.
18	" "	Milk	Genuine.
19	" "	Mustard	Genuine.
20	" "	Pepper	Genuine.
21	" "	Oatmeal	Genuine.
22	April 16th	Milk	Genuine.
23	" "	Milk	Genuine.
24	" "	Milk	Genuine.
25	" "	Mustard	Genuine.
26	" "	Coffee.....	Genuine.
27	" "	Pepper	Genuine.
28	May 15th	Milk	Genuine.
29	" "	Milk	Genuine.
30	" "	Milk	Genuine.
31	" "	Butter.....	Genuine.
32	" "	Butter... ..	Genuine.
33	" "	Butter.....	Genuine.

TABLE E—CONTINUED.

NO.	DATE.	ARTICLES.	REMARKS.
34	June 17th	Milk	Genuine.
35	" "	Milk	Genuine.
36	" "	Milk	Genuine.
37	" "	Coffee	Genuine.
38	" "	Mustard	Genuine.
39	" "	Pepper	Genuine.
40	July 22nd	Milk	Genuine.
41	" "	Milk	Adulterated 20% deficient in fat. Cautioned by Committee.
42	" "	Milk	Genuine.
43	" "	Coffee	Genuine.
44	" "	Pepper	Genuine.
45	" "	Mustard	Genuine.
46	Sep. 18th	Milk	Genuine.
47	" "	Milk	Genuine.
48	" "	Milk	Genuine.
49	" "	Coffee	Genuine.
50	" "	Mustard	Genuine.
51	" "	Pepper	Genuine.
52	Oct. 21st	Milk	Genuine.
53	" "	Milk	Genuine.
54	" "	Milk	Genuine.
55	" "	Coffee	Genuine.
56	" "	Mustard	Genuine.
57	" "	Pepper	Genuine.
58	Nov. 18th	Powdered Cinnamon	Genuine.
59	" "	Cream of Tartar	Genuine.
60	" "	Magnesia	Genuine.
61	Dec. 7th	Powdered Cinnamon	Genuine.
62	" "	Cream of Tartar	Genuine.
63	" "	Magnesia	Genuine.
64	" 15th	Milk	Genuine.
65	" "	Milk	Genuine.
66	" "	Milk	Genuine.

TABLE F.

SUTTON COLDFIELD SANITARY AUTHORITY.

Return, showing the number of Births Registered, together with the number of such cases successfully Vaccinated or otherwise disposed of in the above District during the year ending 31st Dec., 1895.

Vaccination District.	No. of Births Registered during the year ending 31st Dec. 1895.	No. of these cases successfully Vaccinated.	Insusceptible of Vaccination.	Died before Vaccination.	Cases under Postponement.	Removals to other Districts out of the Union.	No. of Cases not to be found.	No. of cases remaining Unvaccinated at date of this Return.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sutton Coldfield (Borough)	207	137	1	14	9	2	1	43

NOTE.—As the Public Vaccination for Sutton Coldfield is performed only in January, April, July, and October in each year, 30 of the cases in column 9 had not attained the age for vaccination at the time appointed in January, 1896.

J. J. STEPHENS,

Aston Union Offices, Vauxhall, Birmingham,
29th January, 1896.

Vaccination Officer
for Aston Union.

TABLE G.

SHewing STREETS IN THE BOROUGH IN WHICH CASES OF
INFECTIOUS DISEASE HAVE BEEN NOTIFIED.

WARD AND STREET.	Small Pox.	Measles.	Scarlet Fever.	Diphtheria.	Typhoid Fever.	Erysipelas.	Croup.
BOLDMERE—							
Chester Road	1	...	...	...	...
Highbridge Road	1	...	...	1	...	...
Sheffield Lane	1	...	...	...	...
Princess Alice Orphan- age	1	..	...	...	...
HILL—							
Hill Village	1	...	...	...	...	...
Lichfield Road	1	...	...	...	...	...
Little Sutton Lane	2	...	...	...	...
Little Sutton...	1	...	...	...	...
Long Lane	1	...	...	...	...
Muffins Den	1	...	...	...	...
Roughley	1	...	...	...	...
MANEY—							
Avenue Road	1	...	...	...	...
Holland Road	2	...	...	...	...
Lower Parade	1	...	...	...	...
Maney	1	...	...	...	...
Manor Hill	1	...	...	...	...
Newhall Street	3	...	...	...	...
Queen Street...	3	...	...	...	...
Reddicap Hill	1	...	...	...	...
The Driffold	1	...	...	...	...
The Parade	1	...	...	...	...
Victoria Road	1	...	...	...	...
Windley Hill	1	...	...	...	...
TRINITY—							
Anchorage Road	1	...	...
Blind Lane	1	...	...	...	...	...
Coleshill Street	4	...	...	...	...

TABLE G.—Continued.

WARD AND STREET.	Small Pox.	Measles.	Scarlet Fever.	Diphtheria.	Typhoid Fever.	Erysipelas.	Croup.
TRINITY—Continued—							
Mill Street ... ..	...	1	...	...	...	...	...
Park Road ... ..	...	...	1	...	...	...	...
Rectory Road ... ..	...	...	1	...	...	...	...
Riland Road ... ..	...	...	2	...	...	...	...
Station Street ... ..	...	...	2	...	...	...	1
Tamworth Lane ... ..	...	...	2	...	...	...	...
Tudor Hill	1	...	...	...	...	...	...
The Blabbs ... ..	...	...	...	...	...	1	...
High Street	1	...	1	...	1	...	...
The Reddicroft	1	...	...	...	...	...	...
WALMLEY—							
Langley Heath ... ..	...	...	2	...	...	...	...
Minworth Greaves ... ..	...	...	...	...	...	1	...
Penns Lane	1	...	1	...	...	...	...
Reddicap Heath ... ..	...	3	...	...	...	...	...
Whitehouse Common ... ..	...	...	2	...	...	...	...
WYLDE GREEN—							
Chester Road... ..	...	...	1	...	...	...	...
Highbridge Road ... ..	...	...	...	...	1	...	...
Sutton Road ... ..	...	...	6	...	1	...	...

TABLE H.

RESULTS OF METEOROLOGICAL OBSERVATIONS TAKEN AT SUTTON COLDFIELD DURING THE YEAR 1895.

DATE	TOTALS.			EXTREMES.														MEANS.			DATE.		
	Rainfall.		Sunshine.	BAROMETER.				THERMOMETERS.								RAIN GAUGE. 360·7 feet above mean sea level.		BARO- METER.	(in shade)				
				Highest Corrected Readings.		Lowest Corrected Readings.		(in shade)				Highest Readings in Sun. (Black Bulb.)				Lowest Readings on Grass.		Greatest Daily Rainfall (including Snow).	Pressure of air, Readings corrected and reduced to 32° Fahr. at mean sea level.	Mean Temperature for the Month.		Relative Humidity.	
	ins.	hrs.	min.	ins.	Date.	ins.	Date.	°	Date.	°	Date.	°	Date.	°	Date.	ins.	Date.						ins.
January	4·262	38	50	30·544	30th	28·939	14th	42·8	19th	7·6	11th	86·0	30th	-2·1	11th	1·120	20th	29·718	30·7	81	January		
February ...	·062	66	30	30·546	16th	29·748	11th	45·0	28th	1·0	8th	103·5	11th	-10·0	8th	·062	2nd	30·152	27·9	86	February		
March	2·173	74	20	30·455	16th	28·744	28th	59·0	21st	25·0	4th	113·8	21st	15·2	3rd	·374	6th	29·720	41·2	88	March		
April	1·941	127	45	30·391	12th	29·463	6th	61·5	23rd	26·7	4th	120·9	28th	18·1	4th	·747	25th	29·919	47·0	80	April		
May	1·321	209	45	30·610	2nd	29·677	19th	78·8	30th	35·0	2nd	133·0	30th	25·0	2nd	·665	30th	29·119	53·6	72	May		
June	·882	135	45	30·461	23rd	29·710	19th	78·0	8th	35·6	15th	132·5	23rd	25·3	15th	·450	26th	30·086	58·0	73	June		
July	4·711	118	20	29·984	2nd	29·394	21st	75·8	8th	45·8	1st	129·2	29th	30·2	31st	·907	18th	29·792	60·6	79	July		
August	3·426	125	30	30·310	25th	29·456	6th	76·2	20th	42·7	25th	125·5	20th	31·2	25th	·510	5th	29·922	60·1	76	August		
September ...	·732	204	5	30·406	21st	29·518	3rd	83·0	29th	30·5	23rd	135·1	26th	28·0	23rd	·320	2nd	30·116	59·3	86	September		
October	3·351	73	40	30·263	20th	28·983	5th	72·0	1st	25·0	26th	118·7	1st	13·0	24th	·875	8th	29·782	45·6	86	October		
November ...	3·565	32	0	30·365	18th	29·247	8th	60·7	16th	27·8	18th	94·1	14th	12·1	18th	·793	30th	29·769	42·4	85	November		
December ...	1·957	19	20	30·272	27th	28·996	16th	54·5	5th	24·7	11th	84·8	1st	13·2	21st	·410	12th	29·804	36·7	89	December		
	ins.	hrs.	min.															Means for the year.		29·825	46·9	82	

The greatest amount of rain any one month was 4·711 inches during July ; and the greatest amount during any one day was 1·120 on January 20th.

Rainfall in excess of half an inch also fell on the following days :—January 12th and 15th, April 25th, May 30th, July 18th, August 5th, Oct. 5th, 8th and 21st, Nov. 5th and 30th.

The highest corrected reading of the Barometer was 30·610 on May 2nd ; and the lowest was 28·744 on March 28th.

The highest reading of Thermometer in shade was 83·0 on September 29th ; and the lowest was 1·0 on February 8th.

The highest reading of the Solar Radiation Thermometer was 135·1 on Sep. 26th ; and the lowest reading of the Terrestrial Radiation Thermometer was -10·0 on February 8th.

C. F. MARSTON, Assoc. MEM. INST. C. E.,
Borough Surveyor.

RESULTS OF HYDROLOGICAL OBSERVATIONS

STATION	DATE	WATER LEVEL		WIND	TEMPERATURE	DIRECTION	REMARKS
		FEET	INCHES				
1	1/1/00	10.5	0.0	SE	65	SW	Light rain
1	1/2/00	10.5	0.0	SE	65	SW	Light rain
1	1/3/00	10.5	0.0	SE	65	SW	Light rain
1	1/4/00	10.5	0.0	SE	65	SW	Light rain
1	1/5/00	10.5	0.0	SE	65	SW	Light rain
1	1/6/00	10.5	0.0	SE	65	SW	Light rain
1	1/7/00	10.5	0.0	SE	65	SW	Light rain
1	1/8/00	10.5	0.0	SE	65	SW	Light rain
1	1/9/00	10.5	0.0	SE	65	SW	Light rain
1	1/10/00	10.5	0.0	SE	65	SW	Light rain
1	1/11/00	10.5	0.0	SE	65	SW	Light rain
1	1/12/00	10.5	0.0	SE	65	SW	Light rain
1	1/13/00	10.5	0.0	SE	65	SW	Light rain
1	1/14/00	10.5	0.0	SE	65	SW	Light rain
1	1/15/00	10.5	0.0	SE	65	SW	Light rain
1	1/16/00	10.5	0.0	SE	65	SW	Light rain
1	1/17/00	10.5	0.0	SE	65	SW	Light rain
1	1/18/00	10.5	0.0	SE	65	SW	Light rain
1	1/19/00	10.5	0.0	SE	65	SW	Light rain
1	1/20/00	10.5	0.0	SE	65	SW	Light rain
1	1/21/00	10.5	0.0	SE	65	SW	Light rain
1	1/22/00	10.5	0.0	SE	65	SW	Light rain
1	1/23/00	10.5	0.0	SE	65	SW	Light rain
1	1/24/00	10.5	0.0	SE	65	SW	Light rain
1	1/25/00	10.5	0.0	SE	65	SW	Light rain
1	1/26/00	10.5	0.0	SE	65	SW	Light rain
1	1/27/00	10.5	0.0	SE	65	SW	Light rain
1	1/28/00	10.5	0.0	SE	65	SW	Light rain
1	1/29/00	10.5	0.0	SE	65	SW	Light rain
1	1/30/00	10.5	0.0	SE	65	SW	Light rain
1	1/31/00	10.5	0.0	SE	65	SW	Light rain

The following table shows the results of the hydrological observations at the station during the month of January, 1900. The water level was observed at the station at the following times: 1/1/00, 1/2/00, 1/3/00, 1/4/00, 1/5/00, 1/6/00, 1/7/00, 1/8/00, 1/9/00, 1/10/00, 1/11/00, 1/12/00, 1/13/00, 1/14/00, 1/15/00, 1/16/00, 1/17/00, 1/18/00, 1/19/00, 1/20/00, 1/21/00, 1/22/00, 1/23/00, 1/24/00, 1/25/00, 1/26/00, 1/27/00, 1/28/00, 1/29/00, 1/30/00, 1/31/00. The water level was observed at the station at the following times: 1/1/00, 1/2/00, 1/3/00, 1/4/00, 1/5/00, 1/6/00, 1/7/00, 1/8/00, 1/9/00, 1/10/00, 1/11/00, 1/12/00, 1/13/00, 1/14/00, 1/15/00, 1/16/00, 1/17/00, 1/18/00, 1/19/00, 1/20/00, 1/21/00, 1/22/00, 1/23/00, 1/24/00, 1/25/00, 1/26/00, 1/27/00, 1/28/00, 1/29/00, 1/30/00, 1/31/00.