Dr. R.J. Reece's report to the Local Government Board on fever prevalence at Aldbrough, in the Skirlaugh rural district.

OFFICIAL COPY.

Dr. R. J. Reece's Report to the Local Government Board on Fever Prevalence at Aldbrough, in the Skirlaugh Rural District.

W. H. Power,
Assistant Medical Officer,
April 25th, 1898.

In the first quarter of the year 1897, the Board received a communication from the Vicar of Aldbrough to the effect that there had been cases of enteric fever in the parish, that the Rural District Council had been informed, and that as a result a visit had been made to that village by the Medical Officer of Health, who had reported to the Council the extremely unsatisfactory sanitary conditions of certain houses affected. The vicar, however, added that no steps had been taken to practically amend the very serious conditions disclosed.

The Board forwarded a copy of the Vicar's letter to the Skirlaugh Rural District Council, and requested that the District Council would instruct their Medical Officer of Health to prepare a report upon the cases of fever therein referred to and on the sanitary condition of the premises in question.

This report was furnished to the Board in the second quarter of the year, and the District Council at the same time wrote to the Board, stating that the Inspector of Nuisances had been directed to serve the necessary notices for the provision of a proper water supply in the cases referred to, and also requiring the removal of the existing nuisances. Whether the sanitary improvements indicated in this letter were satisfactorily carried out will be shown by the condition of affairs discovered at my inspection, and hereafter set forth in this report.

The report of the Medical Officer of Health showed that a considerable difference of opinion existed between him and the local medical practitioner as to the exact nature of the disease prevalent in the village, and that the sanitary circumstances of the invaded houses were unsatisfactory.

Under the circumstances the Board considered that an inspection of the village should be made by one of the Board's Medical Inspectors. Owing to the exigencies of the service no Medical Inspector could be spared for this duty until November 1897, when I was instructed to undertake the inquiry.

Aldbrough is a village situated, about 1¼ miles from the sea, on a slight eminence of gravel overlying boulder clay. The highest point in the village is some 60 feet above Ordnance Datum, and the surface of the gravel upon which most of the dwellings stand slopes northward towards a brook, the Lambwath stream, traversing the boulder clay from east to west, at about 34 feet above Datum. The limit of the gravel capping the eminence occupied by the village

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is on all sides near to the 50 feet contour line. The number of inhabited houses in the parish is 170, the population is 666, the rateable value is £5,356, and the area is 4,904 acres. The village only occupies a small portion of the parish, but includes within its area almost all the inhabited houses, and, consequently, nearly all the population. Brick and drainage-pipe making is carried on upon a small scale, otherwise the village may be considered to be occupied by people employed in agriculture.

Sanitary Circumstances.

The houses are mainly built of local brick, and are tiled or slated. On the whole they are in good repair and kept clean. Having been built before the age of damp courses, the walls are often damp, and in some instances this dampness is increased either by an absence of eavespouting, or by the rain-pipes not being carried down to the ground level and thence conveyed away from the site of the house. At the majority of houses, however, the rain-water is conducted from at least one slope of the roof to an underground, or partly underground, tank, whence it is raised for use for washing and household purposes by means of a pump or a bucket and rope. In no instance did I find that the rain-water was drunk or used for culinary purposes.

Each cottage has some garden land of its own, though from the shape of the village, an irregular oval, with two streets in the long axis and three cross streets, the open space is not so large in some instances as one might at first be led to expect.

I am informed by Mr. Hardy, a District Councillor who has lived in the village many years, that at one time all the drainage ran down open gutters or ditches to find its way out of the village in two opposite directions: (1) northward to the Lambwath stream, the water from which, after uniting with certain "level land drains," finds its way to the Humber through Hull; and (2) southward, principally towards the Keyingham level drain, which also discharges into the Humber, in the neighbourhood of Hedon. Some 30 years or so ago the village was drained. Drain pipes made at the local clay pit were put down in all the village streets and along the backs of the rows of cottages, &c. These pipes vary from 6″ to 1′ in diameter, they are unglazed and unsocketed, and are puddled at the joints with clay. They cannot therefore be considered watertight. These drains or sewers take the surface and slop water to the natural outfalls of the old ditches on the north to the Lambwath stream, and on the south to the Keyingham drain by more than one outlet.

The Lambwath stream has its origin practically at the cliff edge, the water running inland to the Humber. This stream, which is liable to be flooded, receives the bulk of the surface water and slop drainage of Aldbrough.

At the back of most of the cottages there is a gully trap, the drain from which may or may not communicate with the drain in one of the main streets; apparently in some instances the house-drain is lost in the garden.

The solid excrement finds its way sooner or later to the soil. In many instances there are merely "boghole" privies, often close to the dwelling house; in other instances there are pail closets. The contents of the pails and privies are, almost without exception, emptied on and dug into the gardens. Each house has its own privy or pail closet. I am informed that there is no such thing as a water-closet in the village. Connected with the privies are ashpits: these as observed are never covered over, being in most instances mere holes in the ground; or the refuse is placed on the ground near the privy. Sometimes the site of the refuse tip is marked out with rough brickwork: the floor of this rude ashpit is in most instances below the level of the ground, and no attempt is made to keep it watertight. It was evident that solid excreta from the domestic chamber utensils are thrown upon such refuse heaps.

The scavenging of privies and refuse heaps is left to the inhabitants.

The water supply of the village, other than the rain-water before mentioned as being used for household purposes, is derived from shallow wells. In certain

cases the cottages have each its own well, but more commonly one well does duty for two or more dwellings. The wells vary from 10′ to 20′ in depth ; only one well was observed which was said to attain a greater depth, *i.e.*, 25′ or more. The well in question was sunk on the extreme limits of the gravel area upon which the village stands, *i.e.*, at a point where the clay comes to the surface, and may therefore apparently have obtained its water from a bed beneath the clay. The wells are dry steined, and in most cases are provided with a pump. They are often placed near to the dwelling-houses, in proximity to privies and ashpits.

The Fever.

Mr. Robert Bradford, the sole medical practitioner at Aldbrough, kindly made a list of the patients, whose illness he considered to be enteric fever, attended by him from July 1896, to the time of my inquiry ; he also supplied me with information as far as possible as to the date of his first attendance on the patients, and an account of the clinical symptoms manifested by each, and in other ways assisted me during my inquiry. His assistance was the more valuable inasmuch as the Infectious Disease (Notification) Act, 1889, is not in force in the district. During my inquiry I discovered certain cases of illness which had not been professionally treated, but which seemed to me should be classed among the patients, the cause of whose disease was under investigation.

It transpires that on the 22nd July, 1896, Mr. Bradford was summoned to attend L——a H——n, a girl aged 15. *Vide* (1) on Map. The day previous she had visited Hull with an excursion party, and had been caught in the rain "getting wet through." Previous to this she had not left the village for several weeks. She at first appeared to be suffering from a severe cold with high temperature. She had pains in her limbs and back, and complained much of headache. Mr. Bradford, however, not being satisfied as to the exact nature of her illness, after some fortnight's attendance, summoned another medical practitioner in consultation ; the result of the consultation was that the case was diagnosed as one of enteric fever. Acute diarrhœa, with typical enteric stools, commenced in the third week of the girl's illness, and much blood was passed from the bowel. After some six weeks this girl recovered.

On 20th August, 1896, L——s H——n, aged 18, brother of the above, fell sick ; on September 1st his sister D——, aged 16, was attacked, and a day or two later his brother A——, aged eight. In none of these cases was diarrhœa a marked symptom, headache being the symptom most complained of, with pains in the limbs. This symptom—headache—was particularly referred to by all the patients I had an opportunity of questioning. Delirium was also a prominent symptom in most cases. L——s was ill for six weeks ; D—— was in bed a month, but A—— was only in bed a day or two, his illness being of a milder nature than the others. On 2nd November L——d, aged 23, brother of the above, was attacked with acute headache and pains in his back and limbs. There was some looseness of the bowels, though diarrhœa was not a marked symptom. On 27th November Mrs. H——n, the mother of the family, fell sick with headache, pains in her limbs, and some diarrhœa. The opinion of the family as to the nature of her illness was that she had been over-worked and "completely knocked up" by nursing her sick children. The father of the family, and two children other than those mentioned, were not ill ; they were aged the one 19 years and the other 10 years.

On 24th November G—— S——, aged 33, was attacked. *Vide* (2) on Map. He suffered from headache and vomiting, and a few days later from acute diarrhœa, which lasted for 14 days. He was unwell for eleven weeks. When he had been ill a month, two of his children, aged six and four years respectively, were attacked with diarrhœa and vomiting ; their diarrhœa lasted for a fortnight, and they were very ill for a month. About 14 days after these two children were attacked the third child, aged two and a-half years, fell sick, and his illness followed the course of the others. These three cases were not medically attended. During the illness of G—— S——, his sister came to help nurse him, and she stayed about two weeks. She returned to Hessle, and died within a month, the cause of death being certified as "Continued

fever, cerebral effusion." The wife of G—— S—— does not appear to have been attacked.

On December 7th, L—— E——, aged 15, returned home ill to the village. *Vide* (3) on Map. She had left it on 3rd December to take a situation. She died on 3rd January 1897. During her illness she suffered from headache and diarrhœa with stools "like pea soup," and passed blood in her motions. Medical attendance was not summoned until Christmas-day, by which time her sister A——, aged 12, and her brother A——r, aged 3, were also ill. The family consisted of a man, aged 41, his wife, aged 37, and children, aged respectively 17, 15, 14, 12, 9, 8, 5 and 3 years. The father ailed nothing, but the mother suffered from headache and diarrhœa, and all the children were more or less ill, but no medical attendance was solicited on their behalf. Since the "fever" they have removed to another house; their previous house must have been over-crowded; their house is not kept particularly clean. They drank the water from the well used by the S—— family.

On January 3rd, 1897, M. E. P——, aged 17, returned home (*vide* (4) on Map) ill from Garton, in which village no similar disease was known to have occurred, and where she had been in service. She had previously been at home from November 23rd to November 30th, and during the Christmas week. During her illness she suffered from headache and diarrhœa with "pea soup" stools. On her return home the family was scattered, only her father, aged 39, and her sister, aged 15, remaining to nurse her. Her mother went away to be confined, and her two brothers, aged 12 and 6 years respectively, were sent to relations at a distance. There appears to have been no further illness in this family. The girl was a friend of, and often visited, the E—— family.

Also on 2nd January Mrs. G——, aged 30, was taken ill with similar symptoms. In the second week after the commencement of her illness she was confined. Since her illness she has been partially deaf. *Vide* (5) on Map.

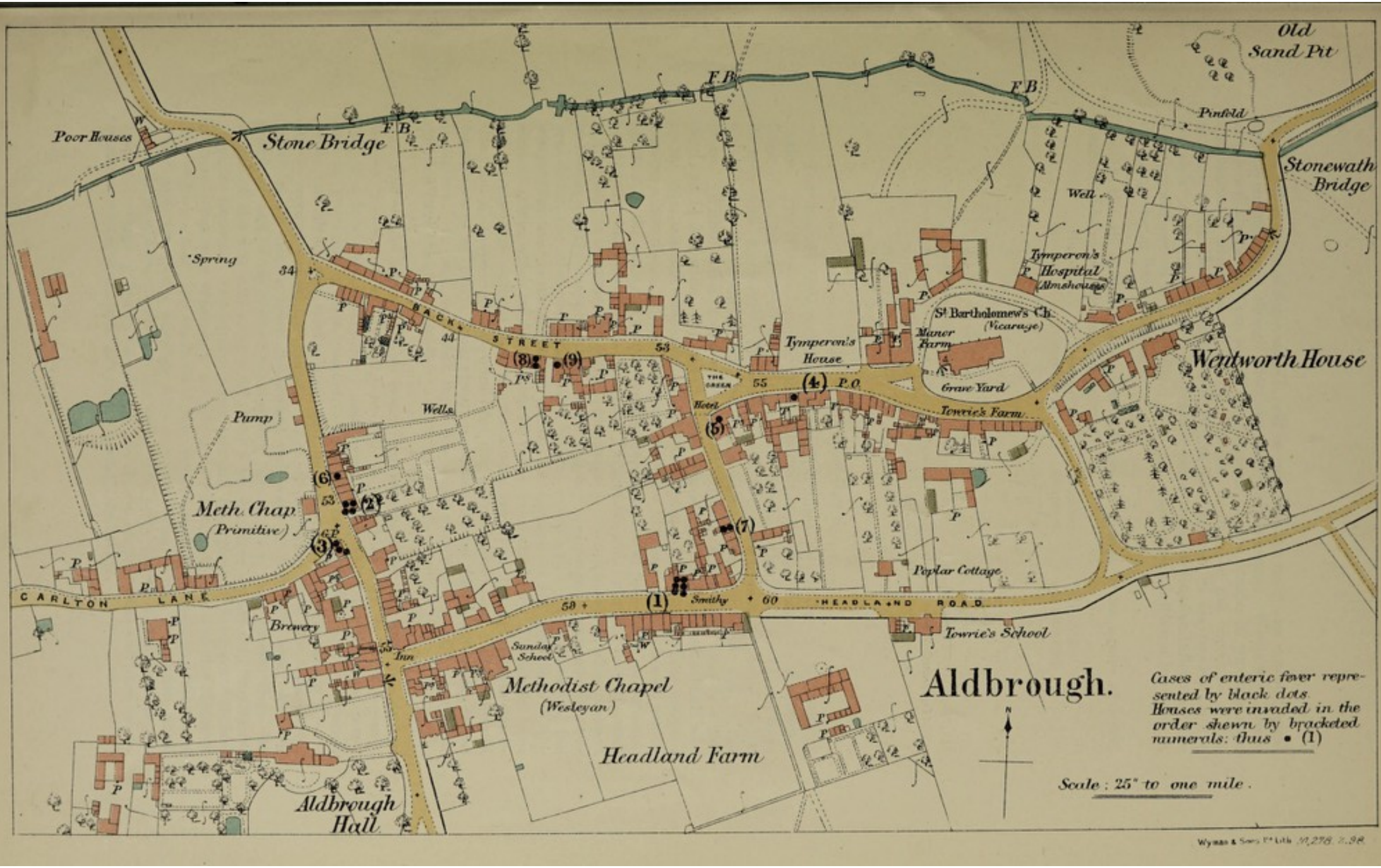
On 3rd February K—— A——, aged 12, was attacked, and was ill seven weeks. She suffered from headache, and in her case diarrhœa lasted for three weeks, the stools being of a "pea soup" character. After she had been ill five weeks, her sister A——, aged nine, was attacked with a similar illness, but apparently of a milder nature. The other inmates of the family, father, aged 48, mother, aged 40, and sister, aged 20, were not ill, though they nursed the sick children. *Vide* (7) on Map.

K—— A—— had assisted a Mrs. H—d—n for a short time in her housework on account of Mrs. H—d—n not being well. She discontinued this assistance, feeling unwell, and her illness commenced about 14 days later. This Mrs. H—d—n lived three houses removed from the S——'s, and, like the E——'s, obtained water from the same pump well.

Mrs. H—d—n complained only of headache and weakness; her husband was also ill for a day or two about this time. *Vide* (6) on Map. The exact nature of the illness of either I could not ascertain. There were three children in the house at the time, aged 5, 3, and 1 year respectively; they were not at that time markedly ill, though apparently unwell.

There appears to have been no other case in the village until 5th July, when G—— J——, aged 53, was taken ill. *Vide* (8) on Map. I was not able to find him, but his married daughter informed me that he was first taken ill with headache and vomiting, followed by looseness of the bowels, the stools being of a "pea soup" character. She saw no blood in the motions. He was six weeks in bed, and developed bed sores. When he had been ill some weeks his daughter H——, aged 16, was attacked with headache and diarrhœa, and she had not recovered her health on 1st December 1897, the day of my visit.

On 15th July 1897, M—— C——, aged four, became ill with headache; some days later she suffered from a certain amount of diarrhœa. She was in bed over a month. During her recovery she lost most of her hair. *Vide* (9) on Map.


Old Sand Pit
Poor Houses
Stone Bridge
F.B.
F.B.
F.B.
Pinfold
Stonewath Bridge
Well
Spring
34
Tymperon's Hospital (Almshouses)
St Bartholomew's Ch (Vicarage)
Manor Farm
Tymperon's House
BACK STREET
53
44
THE GREEN
55
P.O
Grave Yard
Wentworth House
Hotel
Towrie's Farm
Pump
Wells
(8)
(9)
(4)
(5)
(6)
(2)
(3)
(7)
Meth. Chap (Primitive)
Poplar Cottage
CARLTON LANE
Smithy
60
HEADLAND ROAD
(1)
58
Towrie's School
Brewery
Inn
Sunday School
Methodist Chapel (Wesleyan)
Headland Farm
Aldbrough Hall
Aldbrough.
N
Cases of enteric fever represented by black dots. Houses were invaded in the order shewn by bracketed numerals: thus • (1)
Scale: 25" to one mile.

From a study of these cases it will be seen that not every one was a typical case of enteric fever, though diarrhœa was fairly constant. Whenever I have mentioned the term "pea soup" in reference to the stools, it was the term spontaneously made use of by the relatives to describe the condition of the motions. The Medical Officer of Health has referred in his reports on the outbreak to the above cases as probably being those of Russian influenza; the local practitioner on the other hand does not consider that influenza has been in the village for at least two years.

On the whole, there were some 28 cases of disease of the nature of fever, distributed in nine different houses.

House invaded.	Number of occupiers.	Number attacked.	Number not attacked.
1	9	6	3
2	5	4*	1
3	10	9	1
4	6	1	5
5	? several	1	several
6	5	2	3
7	5	2	3
8	2	2	0
9	5	1	4

* And a visitor at Hessle.

The sanitary circumstances under which these people live is deserving of notice. The H——n's house, the first house invaded, is situated on the highest point of ground in the village, 60 feet above Ordnance Datum. (*See* (1) on map, 25 inch scale, annexed.) The water supply is derived from a dry steined brick well, 11 feet deep, sunk in the back yard within a few feet of the wall of the house. Within 5 feet of the well is a brick cesspool about 5 feet long by 4 feet deep and 1½ feet wide. At one time this cesspool had been cemented half way up the sides, but the cement had for the most part fallen away. This cesspool receives through an agricultural pipe the slop drainage of the house, which enters it at the same end as the overflow pipe leaves it to pass under an outhouse to discharge into the drain in the street. The waste water pumped from the well is supposed to be carried by pipes to the cesspool. Water, however, when pumped to excess, quickly disappears into the ground, but none finds its way into the cesspool direct, the inference being that it returns to the well. The contents of the cesspool are used on the adjoining garden for manure, as are also those of the boghole privy, which is placed some 15 yards from the well. The stools from the patients who suffered from diarrhœa were buried in the garden with quicklime, but no disinfectants were used for the infected linen, &c. The ashpit is contiguous to the privy, being merely a shallow hole in the ground where refuse is thrown. It was clear that the refuse heap also receives solid excrement emptied from chamber utensils.

The second house, invaded some four months after the first, was that of G—— S——, whose dwelling is 200 yards to W. by N. of H——n's, but at a level which is some 7 feet lower (53 O.D.). On the same level, and in proximity to one another, stands the house of E——, where disease broke out about two weeks later, and the house of H—d—n, where K—— A—— worked before her illness. They all used water from the same pump, which stands over a brick dry-steined well some 12 feet deep, sunk within a couple of feet of the wall of the dwelling house. Five yards distant from the mouth of the well, and on ground about 3 feet lower, is a gully trap into which slops are thrown. The surplus water pumped from the well is supposed to find its way by a pipe connexion to this gully; but at the time of the illness of G—— S—— this pipe connexion was blocked, and in consequence the waste water from the pump, together with any slop water thrown hereabouts, must needs have had ready access to the well. The privy stands a few feet distant from the dwelling house, but during the illness in the house the loose stools were thrown on to the open ash-heap adjoining the privy.

The privy of the E—— family was situated against the wall of the dwelling house ; it has since been removed. The excrement from the patients was partly thrown on the ash-heap and partly buried in the garden.

The privy of the H—d—n family adjoins that part of the dwelling house which is used as a pantry.

There is no evidence to show that Mrs. G—— attacked on January 2nd visited any of the families previously attacked. The drinking water was obtained from a well 19 feet deep, and dry steined, and sunk in the yard within a few feet of the house. There is a privy on the other side of the yard. It is, perhaps, worthy of note that the house is situate on the northern outskirts of the village, about 55 feet above Ordnance Datum, and that on the same day as Mrs. G—— was attacked, M. E. P—— returned home ill. The house inhabited by the P—— family is close to the G——'s house and on the same level. There is a pail closet, but the excrement is utilized in the garden. During M. E. P——'s illness, the liquid motions were thrown on an open ash-heap, and chloride of lime placed over them. The garden is on a higher level than the dwelling house. A pump stands over a well about 10 feet from the house in a yard between the house and garden. The depth and the nature of the construction of the well are not known. However, the girl P—— had been a visitor at the house of the E—— family previously attacked.

The house of the A——— family stands between the houses of H——n (1) and G—— (5). The pump from which the drinking water was obtained is about 10 yards from the dwelling house ; the depth of the well is not known. The privy adjoins an outhouse, which in turn abuts on the wall of the dwelling house, and the ashes and refuse are thrown on the ground near the privy ; they, with the contents of the privy, are afterwards removed to a distance for use on the fields. In each of the cases mentioned there is a slop gully in the yard.

The water supply of the J—— family is derived from a well some 25 feet deep, built of brick and dry steined. It was found, after illness appeared in the house, that the water pumped to waste ran back into the well with probably some of the slop water. This had been rectified at the time of my visit. Separated from the dwelling house by a passage is a row of privies for the use of the inhabitants of the adjoining cottages. The house stands about 48 feet above Ordnance Datum.

C——'s house is separated from J——'s by an entrance way, giving carts access to the back yard. The C—— family drank the water from J——'s pump.

During the spring of last year, the waters of H——n's well, sample A, A———'s well, sample B, and G—— S——'s well, sample C, were analysed by Mr. Baynes, Public Analyst of Hull and the East Riding.

The following is a copy of the analysis :—

CERTIFICATE OF ANALYSIS.

" Three samples of water received from Mr. Solomon on the 16th inst. (March). Marks A. B. C. " re " Typhoid Fever at Aldbro'.

	A.	B.	C.
	Grains per gallon.		
Total solid residue	118·00	134·00	113·00
Chlorine	11·40	12·95	14·40
Nitrogen as nitrates and nitrites	·95	·94	·78
Oxygen absorbed in 15 minutes at 80° Fahr....	·093	·050	·033
" " 3 hours " " ...	·123	·122	·065
	Parts per million.		
Free Ammonia	·044	·026	·022
Albuminoid Ammonia	·220	·154	·073

	A.	B.	C.
		Degrees, Clarke.	
Temporary hardness	21·50	16·50	24·0
Permanent ,, ...	39·00	46·40	35·8
Total ,, ...	60·50	62·90	59·8

NOTE BY MR. BAYNES.

"From the above data I have not the slightest hesitation in absolutely condemning A. and B. for both domestic and drinking purposes, whilst C., although not so organically impure as to exclude it from a third class drinking water, contains so much total solid residue that it should not be used until after thorough filtration. They all appear to be surface wells, or very shallow, and I should advise if possible the discontinuance of all three, as they are at best dangerous sources of supply."

The waters from all the three wells were still in use at the date of my inspection, and it may be taken that they are types of the rest of the water procurable from the surface wells in the village.

It will have been observed that the "fever" began in a house situated at the highest point in the village, and that several cases occurred in that house covering a considerable period of time. It will also be noticed that the households subsequently invaded were successively attacked at varying intervals, the disease prevalence being extended to over a year.

It is a matter of interest to note that the order in which these houses were successively attacked follows the direction in which the underground water might be expected to travel from the first house invaded, which, moreover, was not free from the disease for a period of at least five months, and it is reasonable to suppose that during all this time fresh infective material from the excretary discharges of the patients would find access to the earth surrounding the dwelling.

[The slowness of the spread of the disease does not coincide with the rapid diffusion of Russian influenza through a village community. The fewness of the cases compared with the total number of the inhabitants, and the absence of pulmonary complications, also tend to exclude the idea of the prevalent disease having been Russian influenza.]

Whatever may have been the exact nature of the disease prevalent in Aldborough, and I am of opinion that it was in the main enteric fever, there can be no doubt that the water supply is dangerous, and that steps should at once be taken to procure water from a source more reliable than surface wells sunk in porous gravel, which must be saturated with filth from the boghole privies, uncovered and faultily constructed ash-heaps and refûse tips, and drain pipes exuding their contents at defective joints.

It is also evident that the village should be supplied with a proper system of modern sewerage.

SANITARY ADMINISTRATION.

The Medical Officer of Health, Mr. C. Solomon, receives a salary of £50 per annum, of which part is repaid out of the county funds.

The Inspector of Nuisances, Mr. John Weldon, has been recently appointed at a salary of £30 per annum. He is also Surveyor of Highways to the District Council at an annual salary of £150. He devotes the whole of his time to the duties of these two offices. He has had no special training in sanitary matters.

The Infectious Disease (Notification) Act, 1889, the Infectious Disease (Prevention) Act, 1890, and the parts of the Public Health Act Amendment Act, 1890, applicable to rural districts, have not been adopted by the Rural District Council of Skirlaugh. Neither are there any regulations for dairies, cowsheds, and milkshops, nor any bye-laws in force in the district. There is no disinfecting apparatus, and no isolation hospital provision.

In this connexion, I think the attention of the Rural District Council should be especially given to the provisions of the Infectious Disease (Notification) Act, 1889, by the adoption of which they will obtain such early information of cases of the notifiable diseases (*e.g.*, enteric fever) which may be imported into or occur within their district as will enable them to take prompt action to prevent their spread.

I have ascertained that in addition to the payment of the officers' stipends, and a few shillings yearly on minor matters, the Rural District Council and their predecessor, the Rural Sanitary Authority, have spent on permanent sanitary works in their district, since the passing of the Public Health Act of 1875, the following amounts only, viz. :—In the year 1894 the sum of £5 was expended, and the sum of £11 1*s.* 6*d.* during the year 1897, being a total amount of £16 1*s.* 6*d.* in some 22 years.

I take this opportunity of thanking Mr. Hardy, Rural District Councillor, Mr. Solomon, Medical Officer of Health, Mr. Bradford, Mr. C. W. Hobson, Clerk to the Rural District Council, and other gentlemen, for assistance rendered during my inquiry.

RICHARD J. REECE.

January 1898.

RECOMMENDATIONS.

Water Supply.

The Rural District Council should take competent advice with a view of securing to each house in the village of Aldbrough an adequate supply of wholesome water.

In the meantime steps should be taken without delay to secure the carrying out of such works as will safeguard existing wells from pollution. Such wells as are found to be irremediably polluted should be permanently closed.

Sewerage.

No unnecessary delay should be allowed to occur in providing the village of Aldbrough with efficient means of sewerage.

Excrement Disposal.

The attention of the Rural District Council should be directed to the grave danger to health arising from the defective construction of the privies and ash-pits in the district. Privies and ashpits should be so constructed and managed as to prevent the admission of rain or ground water into these receptacles and the leakage of filth from the receptacle into the neighbouring soil, and so as to ensure the thorough mingling of ashes with the excreta in the privies. Dryness of contents, together with their frequent removal, are objects which should be kept in view in the alteration of all privies and the construction of new ones.

Scavenging.

The District Council should at once undertake in Aldbrough the duty of removal of privy contents and of house refuse at frequent and regular intervals, either by their own staff or by contractors, under section 42 of the Public Health Act, 1875.

Action in regard to Nuisances.

Inspection of the district for the discovery of nuisances should be carried out thoroughly and systematically in accordance with section 92 of the Public Health Act, 1875. Nuisances should be sought out and the provisions of the Public Health Act for their permanent repression enforced independently of complaints from inhabitants.

Byelaws.

The District Council should without delay adopt, for application throughout their district, a new series of building byelaws, based upon the model series issued by the Board, and, having adopted them, should carry them duly into effect in such manner as to secure the dryness and general wholesomeness of all domestic buildings to be newly erected.

Regulations as to Cowsheds and Dairies.

The Council should take the necessary steps for securing due regulation of cowsheds and dairies.

Isolation Provision.

The Rural District Council should seriously consider the desirability of providing sufficient and proper hospital accommodation for infectious diseases occurring in their district.

It is not necessary that the accommodation provided in the first instance should be on a large and costly scale, but it is essential that it should be ready beforehand in order that the first persons attacked may be promptly isolated with a view to prevent the further spread of the disease.

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