

**Dr. Page's report to the Local Government Board on the circumstances of recent prevalence of scarlatina and enteric fever at Spennymoor, County of Durham.**

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**Dr. Page's Report to the Local Government Board on the  
Circumstances of recent Prevalence of Scarlatina and  
Enteric Fever at Spennymoor, County of Durham.**

GEORGE BUCHANAN,  
Medical Department,  
March 15, 1889.

THIS inquiry was ordered by the Board in consequence of a communication received on November 12th last from Dr. O'Hanlon, Medical Officer of Health of Spennymoor Urban Sanitary District, in reply to the Board's request for information as to a maintained prevalence of scarlatina and enteric fever which Dr. O'Hanlon had notified on November 2nd to have existed in the district during the previous three months. In this communication the prevalence of both diseases was ascribed to the milk supply derived from a farm in Auckland Rural Sanitary District, outside the jurisdiction of the Spennymoor Sanitary Authority, and at which cases of both scarlatina and enteric fever were ascertained to have occurred. In view of the incompleteness of the evidence Dr. O'Hanlon was able, under these circumstances, to adduce respecting the connexion between the milk service and the prevalence of these fevers, further inquiry was ordered, and I visited Spennymoor for the purpose on November 22nd.

Origin of  
inquiry.

On conferring with the sanitary officers, Dr. O'Hanlon, and Mr. Coldwell the Surveyor and Inspector of Nuisances, I learned that while cases of enteric fever and scarlatina had been known in Spennymoor for some time previously, it was not until October 20th that what appeared to be a sudden outbreak of both diseases came to their knowledge.

Particular inquiry was thereupon made, with the result that altogether a dozen infected households were discovered. In some of these households cases already convalescent were met with.

It had meanwhile been rumoured that fever prevailed at a dairy farm outside Spennymoor, in Auckland Rural Sanitary District, having a large milk business in Spennymoor, and attention being directed to the milk supply of the invaded households, it was found that 10 of the 12 had been getting it, directly or indirectly, from this farm.

On Saturday, October 27th, Dr. O'Hanlon, accompanied by Mr. Coldwell, visited the farm, and on inquiring after the health of the inmates was told by the farmer himself that from the middle of July up to the date of their visit his household had not been clear of fever, three of its members having been successively ill of typhoid fever, his wife being then only convalescent, while three children had had scarlatina in August last.

Upon this evidence a special meeting of the Spennymoor Sanitary Authority was called on Monday, the 29th October, at which Dr. O'Hanlon reported these circumstances, and advised that the sale of milk from the farm should at

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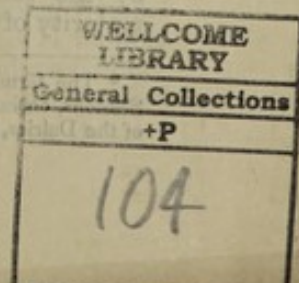
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once be stopped within their district. The Spennymoor Sanitary Authority thereupon communicated with the farmer, who suspended the sale next morning, but resumed it in the evening and again on the following morning, on both of which occasions it was seized in course of delivery by Mr. Coldwell and destroyed pursuant to a Justice's order.\*

At the outset of my inquiry I found it necessary to ascertain, as completely as possible, the whole amount of fever prevalence in Spennymoor, Dr. O'Hanlon labouring under the disadvantage of not having had reported to him cases of infectious illness occurring outside his own practice. Dr. Anderson, the only other medical practitioner resident in Spennymoor, was good enough to furnish me with complete lists of cases occurring in his practice over a considerable period. And I received similar information as to cases occurring in Tudhoe Grange, a part of the town extending into the adjacent Durham Rural Sanitary District, from Dr. Blackett, Medical Officer of Health.

In all there were thus heard of 45 families attacked by scarlatina in which there had occurred 83 cases with 15 deaths, and 19 families attacked by enteric fever in which 25 cases with 5 deaths had occurred in the 22 weeks, July 1st—December 1st, 1888. In searching for the causes accountable for this prevalence of scarlatina and enteric fever, I have made minute inquiry into the individual circumstances of the several invaded families, the results of which will be considered under the respective diseases.

Scarlatina.

It is a notorious fact that scarlatina is seldom if ever wholly absent from this district in common with other colliery districts of the county of Durham. It figures habitually as a cause of mortality in the annual returns. The disease was fatally prevalent in 1881, when it caused 16 deaths, and again prevalent, but with small mortality, in 1884. Returns of sickness placed at my disposal show that scarlatina has been lingering in and about Spennymoor since 1885 until October last, when, becoming active, it may be said to have reached its maximum prevalence by the end of that month. The outbreak would appear to have ended somewhat abruptly, but since the close of my inquiry I have been informed of several later occurrences of the disease. In Tudhoe Grange a like behaviour of scarlatina has been observed *pari passu* with that in the Urban Sanitary District of Spennymoor.

The table on next page shows the number of households invaded week by week from July to November in both localities, later or secondary cases in families, *i.e.*, cases not occurring within a week of first seizures in the same family and for which personal infection was accountable, being distinguished from the latter. The households attacked have been dispersed over the town and belonged, with one or two exceptions, to the labouring class. The 15 deaths were, save that of a youth of 18, all of children between 3 and 12 years of age. Three of the deaths were not medically certified.

Meanwhile, in mid-August, at the suspected dairy farm, three younger children were attacked one after another with scarlatina, the first to be attacked being a child of two and half years not at school, and in whose case no exposure to infection could be ascertained. The children were isolated under medical supervision during illness and desquamation until their complete recovery at the end of September.

In the course of inquiry numerous households afforded evidence as to the operation of personal infection, more particularly by the association of healthy children with others ill or convalescent from the disease. Instances, too, were met with of the return to school of children within a fortnight, and even a week, of attack, and in no less than 26, or 58 per cent. of the invaded households, those first attacked were children who had been attending the elementary schools up to the date of attack. But although I have a strong suspicion that two of these schools, the National and the Board Schools, played a prominent part as centres of infection, implication of school attendance may be more apparent than real in view of the abundant opportunities of infection elsewhere than at school. Disinfectants had been, I found, freely dispensed by the sanitary officers in all known cases, but the construction of the majority of the dwellings and the habits of the inmates are such as to render

\* The farmer was, on December 17, summoned before the Justices at Bishop Auckland Petty Sessions, on informations under sections 116 and 117 of the Public Health Act, 1875, and Article 9 of the Dairies, Cowsheds, and Milkshops Order, 1885, and fined 5*l.* including all costs.



effectual isolation during illness and disinfection afterwards out of the question, while the Sanitary Authority have failed to make public provision for the one purpose or the other.

TABLE showing the NUMBER of HOUSEHOLDS ATTACKED by SCARLATINA in SPENNYS-MOOR and TUDHOE GRANGE (Durham R.S.D.) Week by Week from July—November, 1888.

Week ended	Spennymoor U.S.D.				Tudhoe Grange (Durham R.S.D.).			
	House-holds newly attacked.	Primary Attacks.	Later Attacks.	Attacks afterwards Fatal.	House-holds newly attacked.	Primary Attacks.	Later Attacks.	Attacks afterwards Fatal.
July 7 -	1	1	—	—	—	—	—	—
" 14 -	2	2	—	—	—	—	—	—
" 21 -	—	—	—	—	—	—	—	—
" 28 -	—	—	—	—	—	—	—	—
Aug. 4 -	—	—	—	—	—	—	—	—
" 11 -	—	—	—	—	—	—	—	—
" 18 -	—	—	—	—	—	—	—	—
" 25 -	—	—	—	—	—	—	—	—
Sept. 1 -	—	—	—	—	—	—	—	—
" 8 -	—	—	—	—	—	—	—	—
" 15 -	2	2	2	—	—	—	—	—
" 22 -	—	—	—	—	—	—	—	—
" 29 -	1	1	1	—	—	—	—	—
Oct. 6 -	7	8	11	1	—	—	—	—
" 13 -	4	5	4	2	—	—	—	—
" 20 -	5	5	5	1	2	2	3	2
" 27 -	13	16	2	2	2	2	—	—
Nov. 3 -	3	3	3	1	1	2	—	—
" 10 -	—	—	—	2	1	2	—	2
" 17 -	—	—	—	—	1	1	—	—
" 24 -	—	—	—	1	—	—	—	—
Dec. 1 -	—	—	—	1	—	—	—	—
Totals -	38	43*	28	11	7	9	3	4

\* The difference between 43 and 38 is due to the circumstances that in five households two members in each were simultaneously attacked.

As to the milk supply, none of the seven infected families in Tudhoe Grange obtained milk from the suspected dairy farm, while of the 38 infected families in Spennymoor Urban District, seven used no milk or condensed milk only, 23 were supplied from different dairies, and eight only out of a total of 144 families were known to have used milk from the dairy in question. Mr. Coldwell was good enough to obtain for me lists of customers of the several milksellers in the district, and I find that the incidence of attack upon the two groups of customers has been  $5\frac{1}{2}$  per cent. upon ascertained customers of the suspected dairy, and 6 per cent. upon customers of other sources, a result in accordance with the general evidence obtainable.

The outcome of this part of the inquiry proves conclusively that whatever suspicion may *prima facie* have been justified against the milk service in question, the prevalence of scarlatina has on this as upon previous occasions in Spennymoor been due to the customary agencies of its spread.

Enteric or typhoid fever is commonly assigned as a cause of mortality year by year in Spennymoor. In 1882 it caused five deaths; in 1883 three deaths; in 1885 and 1886 fever as a cause of death was represented by a fatal case certified as *typhus*, and in 1887 by two deaths referred to enteric fever. During 1888 no cases of fever came under notice prior to July, when a death certified from *typhus* fever occurred; and the family having left the neighbourhood at the date of my visit, no further information could be had respecting it. About the end of August a case of enteric fever came under the immediate care of Dr. O'Hanlon. Two families living in different localities of Spennymoor became attacked in September, and during October the disease may be described as prevalent in the town, attacking 11 families in Spennymoor Urban District in addition to one family in Tudhoe Grange. Two families in Spennymoor and one family in Tudhoe Grange were attacked

Enteric fever.



TABLE showing the NUMBER of HOUSEHOLDS attacked by ENTERIC FEVER in SPENNYMOOR U.S.D. and TUDHOE GRANGE (Durham R.S.D.) during August—November 1888.

Week ended	Spennymoor U.S.D.				Tudhoe Grange (Durham R.S.D.)			
	Households newly attacked.	Primary Cases.	Later Cases.	Attacks afterwards Fatal.	Households newly attacked.	Primary Attacks.	Later Cases.	Attacks afterwards Fatal.
Aug. 25 -	1	1	1	1	—	—	—	—
Sept. 1 -	—	—	—	(Nov. 26.)	—	—	—	—
" 8 -	1	1	—	—	—	—	—	—
" 15 -	—	—	—	—	—	—	—	—
" 22 -	—	—	—	—	—	—	—	—
" 29 -	1	1	—	—	—	—	—	—
Oct. 6 -	1	1	1	—	—	—	—	—
" 13 -	3	3	1	—	1	1	—	1
" 20 -	3	3	2	—	—	—	—	(Oct. 29)
" 27 -	5	5	1	3	—	—	—	—
Nov. 3 -	1	1	—	(Nov. 4, 10, 24.)	1	1	—	—
" 10 -	1	1	—	—	—	—	—	—
" 17 -	—	—	—	—	—	—	—	—
" 24 -	—	—	—	—	—	—	—	—
Dec. 1 -	—	—	—	—	—	—	—	—
Totals	17	17	6	4	2	2	—	1

TABLE showing MILK RELATIONS of HOUSEHOLDS attacked by ENTERIC FEVER and SCARLATINA in SPENNYMOOR (Spennymoor U.S.D.) and TUDHOE GRANGE (Durham R.S.D.).

Week ended	Households attacked by				Milk Supply of Households attacked by			
	Enteric Fever.		Scarlatina.		Enteric Fever.		Scarlatina.	
	Households.	Aggregate Cases during Outbreak.	Households.	Aggregate Cases during Outbreak.	Infected Farm.	Other Sources.	Infected Farm.	Other Sources.
July 7 -	—	—	1	1	—	—	—	1
" 14 -	—	—	2	2	—	—	—	2
" 21 -	—	—	—	—	—	—	—	—
" 28 -	—	—	—	—	—	—	—	—
Aug. 4 -	—	—	—	—	—	—	—	—
" 11 -	—	—	—	—	—	—	—	—
" 18 -	—	—	—	—	—	—	—	—
" 25 -	1	2	—	—	1	—	—	—
Sept. 1 -	—	—	—	—	—	—	—	—
" 8 -	1	1	—	—	1	—	—	—
" 15 -	—	—	2	4	—	—	1	1
" 22 -	—	—	—	—	—	—	—	—
" 29 -	1	1	1	2	1	—	—	1
Oct. 6 -	1	2	7	19	—	1	1	6
" 13 -	4	5	4	9	2	2	2	2
" 20 -	3	5	7	15	3	—	2	5
" 27 -	5	6	15	20	3	2	2	13
Nov. 3 -	2	2	4	8	—	2*	—	4
" 10 -	1	1	1	2	—	1	—	1
" 17 -	—	—	1	1	—	—	—	1
" 24 -	—	—	—	—	—	—	—	—
Dec. 1 -	—	—	—	—	—	—	—	—
Totals	19	25	45	83	11	8	8	37
					19		45	

\* One household used condensed milk only.





early in November, when the outbreak ceased. In all 19 families have been invaded, in which families there have been 25 cases with 5 deaths.

The table on the opposite page shows the distribution, week by week, from August to November, of enteric fever in Spennymoor and Tudhoe Grange, distinguishing also primary from secondary attacks occurring in the same households.

Detailed inquiry was made by me into the circumstances of each of these households. The 17 households belonging to Spennymoor Urban District were not generally distributed over the town, but more or less localized, and a distinct grouping of seven families was noted in two contiguous streets, *i.e.*, Jackson and George Streets. No simultaneous occurrence of multiple attacks in any household was met with, but in six households second attacks had followed at intervals ranging from two to eight weeks subsequently to the primary seizures. The ages of the sufferers ranged from 6 to 60 years. With the exception of four families of tradesmen, those attacked belonged to the labouring class. Some of these latter had not been medically attended, and one death in Spennymoor Urban District was not medically certified.

No suspicion has attached to the water supply in general use in the district. It is a moorland water of good quality, derived from the mains of the Wear-dale and Shildon (Waskerley) Company, by which a considerable area, including the city of Durham, is supplied. I saw no indications for suspecting local contamination of this service.

In regard to the sewerage and drainage of Spennymoor I found serious defects of ventilation to exist. The upper portion of the main sewer was unventilated, and the only houses invaded in this locality, two in number, were among the few having direct communication with this unventilated section. Considerable pains had evidently been bestowed upon details of house drainage in each instance, as to severance of waste pipes from the outside drains, but each had served, by means of its soil-pipe from an indoor watercloset, to ventilate the public sewer upon the premises. Nuisance had been complained of from an opening in the sewer, just below its unventilated portion, which, the Surveyor informed me, he had remedied by closing the opening. An ancient culvert, unventilated in any part of its course, has been allowed to remain, and complaint has been made of the escape of foul effluvia into house premises under which it passes to its junction with the modern sewer system. The foul condition of the air in the sewers is aggravated by the fact that a large number of the midden privies, upwards of 100, I was informed, are drained into the tributary sewers. Fortunately, in the case of the cottage property, the sinks are commonly out of doors, but the dilapidated state or bad construction of the drain inlets allows, in many instances, escape of drain effluvia in the backyards and about the houses.\*

But it is more especially in association with prevalent excremental nuisances throughout the district that enteric fever in Spennymoor and Tudhoe Grange has occurred. The midden privy is in general use, and accumulations of filth and refuse were met with close to dwellings under conditions which could not fail to be injurious to health. Complaints were made to me at several of the invaded houses of the offensive effluvia from premises on which such nuisances existed. A fatal case of enteric fever occurred in one of four dwellings, in a yard where an uncovered midden privy was the sole provision for 18 persons. Another case occurred in a group of nine houses, using a block of privies attached to a covered midden measuring 12 feet long by 7 feet broad. Three households were attacked in Jackson Street, and four households in George Street adjoining, streets wherein the privy arrangements are of the worst possible description; the wetness of the contents of the uncovered middens situated within a few feet of the house, and frequently within a yard of the pantry windows, being productive of excremental poisoning of soil, air, and even food. In his annual report for 1887 Dr. O'Hanlon, in enumerating the causes of disease in Spennymoor, refers to "middens and privies being so near the pantry, where food in the shape of meat, butter, milk, and all other necessities are kept. In some houses in Jackson Street there is a lattice to the pantry, and this lattice is an open one, and the privy door when open exactly extends to this

Origin of  
the fever.  
Water  
supply.

Sewerage  
and drain-  
age.

Excrement  
disposal.

\* Since the close of my inquiry I have heard from Mr. Coldwell that ventilation of the sewers is in progress, in accordance with my suggestions.



"lattice, helping to convey the effluvia into the pantry." Even in one of the better houses invaded by the fever, a common privy (the ashpit in this instance being roofed over) existed within a couple of yards of the pantry window which has since been blocked up with a layer of charcoal: a proceeding which can only very partially remedy the danger. And in Tudhoe Grange, the only fatal attack occurred in a house where a common midden privy occupied a corner of a small confined and high-walled yard under circumstances calculated to intensify the filth-contamination of the air.\*

It is true that the unwholesome conditions referred to, and of which examples might be multiplied, are common to houses which on the present occasion escaped attack as well as to invaded houses, but nevertheless these are the conditions under which enteric fever is wont to occur in Spennymoor, and are, I need hardly remind the reader, competent above all others, to maintain endemic prevalence of a disease the specific contagion of which is intimately associated with and spread by excremental filth.

Milk supply. On inquiry into the sources of milk supply of the 19 invaded households in both districts, I found that 11 had been deriving their milk from the suspected dairy farm. This excess of attacks, and the fact of enteric fever having occurred at the dairy farm from July to the end of October, justified investigation as to the real significance of this greater incidence upon its customers. I made inquiry in the first place into the distribution of milk from the farm.

I learned that milk, in daily quantity ranging from 25 to 30 gallons, was brought, morning and evening, to Spennymoor, and, with the exception of supplies delivered in separate tins direct from the farm to half-a-dozen private families, was divided among eight retailers, by two of whom it was used to supplement the yield of their own cows. Lists of customers were furnished, as already stated, by the several milksellers in Spennymoor, but unfortunately three of those supplied from the farm in question were unable to help in this respect, as the whole of their supplies were sold in small quantities over the counter to casual customers. The number of families ascertained to have been more or less habitually supplied with milk from the farm was 144, while those supplied from other sources numbered 500, the incidence on the former group being thus 7.5 per cent., and upon the latter 1.6 per cent., or a difference in the proportion of  $4\frac{1}{2}$  to 1 between the two.

The following table gives for each of the 11 families using the suspected milk the dates of attack and other particulars of their milk circumstances. In three of these families (marked †) the patients were not medically attended, and the true nature of their illness must be regarded as doubtful.

Date of Invasion of Household.	Locality of Household.	Number in Household.		Cases and Dates of Attack.	Daily Milk Supply.	Notes as to Consumption of Milk in Invaded Households.
		Adult.	Other.			
Aug. 25	High Street	2	3	Aged 15, Aug. 25. Aged 17, Nov. 12, died Nov. 26.	1 quart direct from dairy farm.	Both patients and another member of the family milk drinkers.
Sept. 2	Carlton Terrace	2	3	Aged 6, Sept. 2	4-5 quarts	All the members of family milk drinkers.
† Sept. 25	Whitworth Terrace	2	5	Aged 9, Sept. 25	?	Milk partaken of in tea, &c., only.
Oct. 9	Jackson Street	2	6	Aged 16, Oct. 9	1-2 pints	Milk partaken of in tea and coffee only.
Oct. 10	Tudhoe Grange	4	3	Aged 21, Oct. 10; died Oct. 29.	A quart	Patient and other members of family drink milk.
† Oct. 15 (about)	George Street	4	5	Aged 9, Oct. 15 (about).	?	All the children said to have been milk drinkers.
Oct. 17	Jackson Street	2	6	Aged 16, Oct. 17; aged 4, Oct. 31.	?	Patient first attacked drank milk.
Oct. 18	Whitworth Terrace	1	5	Aged 12, Oct. 18; aged 10, Nov. 2.	3-4 pints	Patients and members of family occasional milk drinkers.
† Oct. 22	George Street	2	—	Aged 27, Oct. 22; died Nov. 4.	$\frac{1}{2}$ pint	Milk only partaken of in tea, &c.
Oct. 24	Craddock Street	2	4	Aged 6, Oct. 24	1 pint	Patient partook of milk in tea only.
Oct. 27	George Street	6	3	Aged 59, Oct. 27. Aged 21, Nov. 4, died Nov. 24.	Milk bought occasionally.	Milk occasionally partaken of in tea.

\* At the National School in Spennymoor common midden privies exist in close proximity to the school buildings. The contents of the uncovered midden were wet and most offensive at the time of my visit.



The more prominent facts elicited and set forth in the above table are of interest in their bearing upon the question of milk infection.

An absence of limitation in point of time is indicated, cases occurring at different dates between the end of August and the end of October.

The sequence of attacks in the invaded households shows an absence of simultaneous multiple cases, even amongst children, who are the chief of milk drinkers. In four families only, second attacks occurred and at intervals of from two to three weeks after the first, thus suggesting personal infection as accountable for their occurrence.

(Second cases occurred in two of the remaining eight households deriving their milk supply from other sources.)

Notable connexion between the amount of milk consumed in the invaded households and attacks was not observed, half of them using it for addition to tea or coffee only, and in two but occasionally for this purpose, while of the half-dozen families who obtained their milk directly from the farm one only was attacked (No. 1 in the table). And lastly, in this relation of amount of milk to attack, I may point out that the arrest of the distribution of the suspected milk supply at the end of October had no concern in the cessation of the outbreak, which, as a matter of fact, had already come to an end.

The circumstances of the suspected dairy farm were also inquired into.

This farm is about 3 miles distant from Spennymoor and situated in the adjacent Auckland Rural Sanitary District. It occupies an elevated and open position. The water supply is derived from a shallow surface spring rising in an old unmanured pasture about two field-breadths from the house to which it is raised by means of a hydraulic ram. The supply occasionally fails, and a recent analysis points conclusively to access of surface impurities.\*

The sanitary arrangements were otherwise satisfactory at the time of my visit, but some time in September a common midden privy which stood in the backyard of the farmhouse had been removed, and the yard surface concreted.

Prior to the stoppage of the milk business at the end of October, 20 cows were kept, all of which, the farmer told me, had been in good condition throughout the summer and autumn. He pointed out to me those which had calved during this period, five in number. They were apparently healthy. According to the daily routine of the farm, the cows were milked morning and evening by the farmer, a milk-lad, and two maidservants. The milk, on leaving the cow byre, was—prior to October—allowed to stand until the milking was completed in the backyard, or in an outhouse in the backyard, used also as a washhouse, but afterwards in a turnip shed next the byre. Immediately after the milking was over the whole of the milk, without any special mixing together, and without having entered the dwelling-house, was sent off in the milk tins to Spennymoor. The milk vessels were cleansed by rinsing with cold and then boiling water, and wiped dry with cloths kept for the purpose. They appear to have been kept when not in use in the outhouse or washhouse alluded to, a structure of weather boarding, with open chinks at the end next the former site of the midden privy, and within a few feet of it.

About the middle of July last a male farmservant became ill of what the medical attendant believed at the time to be pneumonia, but which later events proved beyond doubt to have been enteric fever. He was nursed by his mother, who came from the neighbourhood of Thirsk, in Yorkshire, for the

\* Laboratory and Assay Office, Darlington,  
September 21, 1888.

Per gallon.

Colour and appearance in 2-foot tube, clear -	-	-	-	-	-
Smell when heated -	-	-	-	-	None
Chlorine as chlorides -	-	-	-	-	2.38
Nitrogen as nitrates -	-	-	-	-	.1984
Free ammonia -	-	-	-	-	.0042
Albuminoid ammonia -	-	-	-	-	.0021
Oxygen absorbed -	-	-	-	-	.0230
Total solids at 220° F. -	-	-	-	-	75.5

The microscope reveals the presence of moving organisms, fungoid growths, and a few domestic fibres. I am of opinion that the spring is suffering from the infiltration of surface water, but only to a slight extent. If this were stopped, the water would be of good quality.

(Signed) W. F. K. Stock, F.C.S., F.I.C.



purpose, and was also attended by the farmer's wife, a daughter, and two maidservants. The man recovered and left with his mother on August 11 for his home near Thirsk. The Medical Officer of Health for Thirsk Rural Sanitary District reports that immediately upon her return the mother fell ill of enteric fever, of which she died on September 4th, and that two other cases, one also ending fatally, afterwards occurred in the same family.

Regarding the origin of the earliest case at the farm, the only fact I can learn as to the man's movements previous to illness is that on July 2 he had been engaged in carting manure and privy stuff from Spennymoor.

The nature of his illness escaping recognition at the time, no special precautions were taken as to the disinfection of soiled things or the disposal of his discharges, the former being washed with the clothes belonging to the rest of the household in the washhouse, and the discharges thrown into the midden adjoining it. The discharges are described as having been most offensive and some three or four in number a day. About August 20 the farmer's daughter, a girl of 12 years, was attacked. She had been more or less in contact with the first case. She recovered by the end of September. On October 2 the farmer's wife, who had nursed her daughter during illness, was herself attacked. She was convalescent by the end of the month. The nature of both of the latter cases was recognised, and due precautions, it is stated, were observed as to the disposal of discharges and disinfection of soiled things.

On November 3rd an infant aged four months died at the farmhouse, the cause of death being certified as "gastritis; muco-enteritis." The doctor in attendance assured me that there had been no symptoms suggestive of fever about the infant, and he attributed its fatal illness to weaning and want of due care consequent upon the mother's illness in October.

In regard of possible opportunities of infection to which the milk may have been exposed during the above succession of events in the farmhouse, two modes are especially suggested. Infection may have taken place in the act of milking at the hands of those of the milkers, namely, the two maidservants, who, although not themselves suffering from fever, had been more or less in contact with those who were ill. Secondly, infection may have been acquired by the milk afterwards while in the milk utensils, by absorption from air charged with specific effluvia from the midden (into which enteric discharges were freely thrown) while standing in the outhouse or washhouse adjoining it. In either case some relation in point of time between the occurrences of fever at the farmhouse and in the town might reasonably be looked for.

But during the months of July and August, when, as already described, there was absolute carelessness in dealing with enteric discharges and the like at the farmhouse, not a single case of enteric fever was heard of in Spennymoor, nor in Tudhoe Grange until the end of August. Two cases only came under observation during September, and it was not until October, when the more imminent risks of milk infection from privy effluvia had been removed and precautions in dealing with enteric discharges duly observed, that the fever became prevalent in Spennymoor. Curiously coincident as the prevalence of scarlatina and enteric fever at the farmhouse and within the area of its milk service has been, it would appear from the foregoing evidence to have been but a coincidence, although one justifying the *prima facie* suspicion attached to the milk. It is difficult to conceive, in view of the pre-eminently favourable medium offered by milk for the propagation of infection, and after giving due weight to considerations involved in contamination by a particulate contagion, that the milk in question, if infected at all, would, under the conditions described, have been confined in its operations to the diffusion of fever in less than a dozen households out of some 150 supplied by this farm.

And I am disposed to recognise in the excremental nuisances common to the district the main factor of the recent prevalence of enteric fever.

The concurrence of enteric fever with the period of the year at which the disease is usually most prevalent of the disease may be noted.

I have already had occasion to refer to certain of the sanitary circumstances of the district. Much improvement in the condition of Spennymoor has been effected since Dr. Thorne Thorne's inspection in 1874, and Dr. Parsons's inspection in January 1884. Since my own previous visit in connexion with the cholera survey in 1885, the remaining streets of the town have been paved,



channelled, provided with concrete footways, and placed in good order. But there is still much to be done. The next pressing necessity is the abatement of excremental nuisances, and the Sanitary Authority must recognise the dangers of a continuance of the present midden privy system, intensified by the inadequate scavenging in vogue.\*

Byelaws as to new buildings, slaughter-houses, and the keeping of animals, based upon the Board's Model Code, were adopted in September 1885, but require to be enforced in several important matters, and especially as to pig-keeping. The absence of any provision for the isolation of cases of infectious disease or for the disinfection of infected things has already been adverted to.

No regulations have yet been made under the Dairies, Cowsheds, and Milkshops Order, 1885, in pursuance of the powers conferred upon the Sanitary Authority under the Contagious Diseases (Animals) Act, 1886. In the adjacent Auckland Rural Sanitary District such regulations are in force, but the urgent need for more effective supervision of milk farms is shown in the circumstance that this Authority had no information of the prevalence of fever at the dairy farm in question until the action of the Spennymoor Local Board in proceeding against the farmer selling milk within their district.

Lastly, in regard to Tudhoe Grange, part of the town of Spennymoor. The sanitary condition of this populous locality is eminently unsatisfactory. There is a system of sewerage and the main sewers are ventilated, but for the rest there is no scavenging or lighting, the streets are unmade and midden privies are in general use. No regulations as to dairies, &c., are in force, the clerk of Durham Rural Sanitary Authority, within whose jurisdiction Tudhoe Grange is situated, informing me that it was not the intention of the Authority to make any.

Dairies, cow-sheds, and milkshops. ✕

Tudhoe Grange.

DAVID PAGE, M.D.

January 21, 1889.

\* Scavenging and removal of privy midden refuse are by contract, but so inefficiently performed Mr. Coldwell informs me that for some time past the Authority have had to give the contractor additional help.

✕ The Board observe that such regulations have been made since the date of Dr. Page's visit in November last.



channels, provided with concrete footways and placed in good order. The  
they is still much to be done. The most pressing necessity in the aban-  
ment of experimental nature, and the Ministry of Agriculture was requested to  
layers of a continuous of the present night party system, the method by  
the independent scavenging in various.

It follows as to new buildings, slaughter-houses, and the keeping of animals.  
based upon the Town's Model Code were adopted in September 1925, and  
regarding to be entered in several important matters, and especially as to  
pig-keeping. The absence of any provision for the isolation of cases of  
infectious diseases or of the disinfection of animals, the only form  
advised for.

No regulations have yet been made under the Diseases of Animals and Milk-  
shops Order, 1925, in pursuance of the powers conferred upon the Ministry  
Authority under the Contagious Diseases (Animals) Act, 1925. In the  
adjacent Auckland Rural Sanitary District such regulations are in force, but  
the urgent need for more effective supervision of milk farms is shown in the  
circumstances that this Authority had no information of the prevalence of  
fever at the dairy farm in question until the action of the Sanitary Board  
Local Board in proceeding against the farmer selling milk within their  
district.

Lastly, in regard to Town's District, part of the town of Springwood. The Town's  
sanitary condition of this populous locality is eminently unsatisfactory.  
There is a system of sewers and the main system is ventilated, but for  
the rest there is no scavenging or lighting, the streets are unmade and  
inhabited parties are in general not. No regulations as to dust, etc.,  
are in force, the lack of District Rural Sanitary Authority, within whose  
jurisdiction Town's District is situated, is a most interesting one that it was not the  
intention of the Authority to make any.

DATED 24th JAN, 1926.

January 21, 1926.

It is hereby certified that the above is a true and correct copy of the original  
as the same was submitted to the Committee for the purpose of being printed and  
additional copy.

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