

Report to the General Board of Health on a preliminary inquiry into the sewerage, drainage, and supply of water, and the sanitary condition of the inhabitants of the parishes of Alvaston and Boulton, in the county of Derby / by William Lee, Superintending Inspector.

Contributors

Lee, William, 1774 or 1775-1853.
Great Britain. General Board of Health.

Publication/Creation

London : Printed by W. Clowes & Sons ... for Her Majesty's Stationery Office, 1850.

Persistent URL

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PUBLIC HEALTH ACT

(11 & 12 Vict., Cap. 63.)

REPORT

TO THE

GENERAL BOARD OF HEALTH

ON A

PRELIMINARY INQUIRY

INTO THE SEWERAGE, DRAINAGE, AND SUPPLY OF
WATER, AND THE SANITARY CONDITION
OF THE INHABITANTS,

OF THE PARISHES OF

ALVASTON AND BOULTON,

IN THE COUNTY OF DERBY.

BY WILLIAM LEE, Esq., C.E.,

SUPERINTENDING INSPECTOR.



LONDON:

PRINTED BY W. CLOWES & SONS, STAMFORD STREET,

FOR HER MAJESTY'S STATIONERY OFFICE.

1850.

PUBLIC HEALTH ACT
(1 & 2 Vict. Cap. 55)

GENERAL BOARD OF HEALTH

NOTIFICATION.

THE General Board of Health hereby give notice, in terms of section 9th of the Public Health Act, that on or before the 22nd day of January next, being a period of not less than one month from the date of the publication and deposit hereof, written statements may be forwarded to the Board with respect to any matter contained in or omitted from the accompanying Report on the Sewerage, Drainage, and Supply of Water, and the Sanitary Condition of the Inhabitants, of the Parishes of ALVASTON and BOULTON, in the County of Derby; or with respect to any amendment to be proposed therein.

By order of the Board,

HENRY AUSTIN, *Secretary.*

Gwydyr House, Whitehall,

9th December, 1850.

LONDON: W. GLOWES & SONS, STAMFORD STREET.

1850

PUBLIC HEALTH ACT (11 & 12 Vict. cap. 63).

Report to the General Board of Health on a Preliminary Inquiry into the Sewerage, Drainage, and Supply of Water, and the Sanitary Condition of the Inhabitants, of the Parishes of ALVASTON and BOULTON, in the County of Derby. By WILLIAM LEE, Esq., C.E., Superintending Inspector.

WHEREAS, in pursuance of the Public Health Act, 1848, the General Board of Health, appointed for the purposes of that Act, have, upon the petition of not less than one-tenth of the inhabitants rated to the relief of the poor of and within the parishes of Alvaston and Boulton in the county of Derby (the number of the said petitioners exceeding thirty in the whole), directed William Lee, a Superintending Inspector, appointed for the purposes of the said Act, to visit the said parishes, and to make public inquiry, and to examine witnesses as to the sewerage, drainage, and supply of water, the state of the burial-grounds, the number and sanitary condition of the inhabitants, and as to any local Acts of Parliament in force within such parishes for paving, lighting, cleansing, watching, regulating, supplying with water, or improving the said parishes, or having relation to the purposes of the said Act; also as to the natural drainage areas, and the existing parochial or other local boundaries, and the boundaries which might be most advantageously adopted for the purposes of the said Act: Now I, the said William Lee, having previously given the notices directed by the said Act, proceeded upon the said inquiry in the manner directed by the said Act, and do report in writing to the said General Board upon the several matters with respect to which I was directed to inquire as aforesaid, and upon certain other matters in respect of which I deem it expedient to report for the purposes of the said Act, as follows:—

MY LORDS AND GENTLEMEN,

*Gwydyr House,
28th October, 1850.*

THE inquiry into the sanitary condition of Alvaston and Boulton was opened in the school-room at Alvaston at 10

o'clock on the morning of Monday the 22nd of July last, and was continued on that and the following day, until I had obtained the evidence upon which this Report is founded.

Mr. James Wright proved that the notices of the inquiry had been duly affixed, after which I explained to the inhabitants present the objects of the inquiry, and then proceeded to an inspection of the parishes. In this part of my duty I was accompanied by the Rev. Edward Poole, the incumbent of the two parishes, the Rev. William Cantrell, Charles Holbrooke, Esq., and Mr. Richard Henshaw.

GEOGRAPHICAL POSITION.—Alvaston and Boulton are both situate in the union of Shardlow, hundred of Morleston and Litchurch, south division of the county of Derby, and about 3 miles S.E. by E. from the city of Derby.

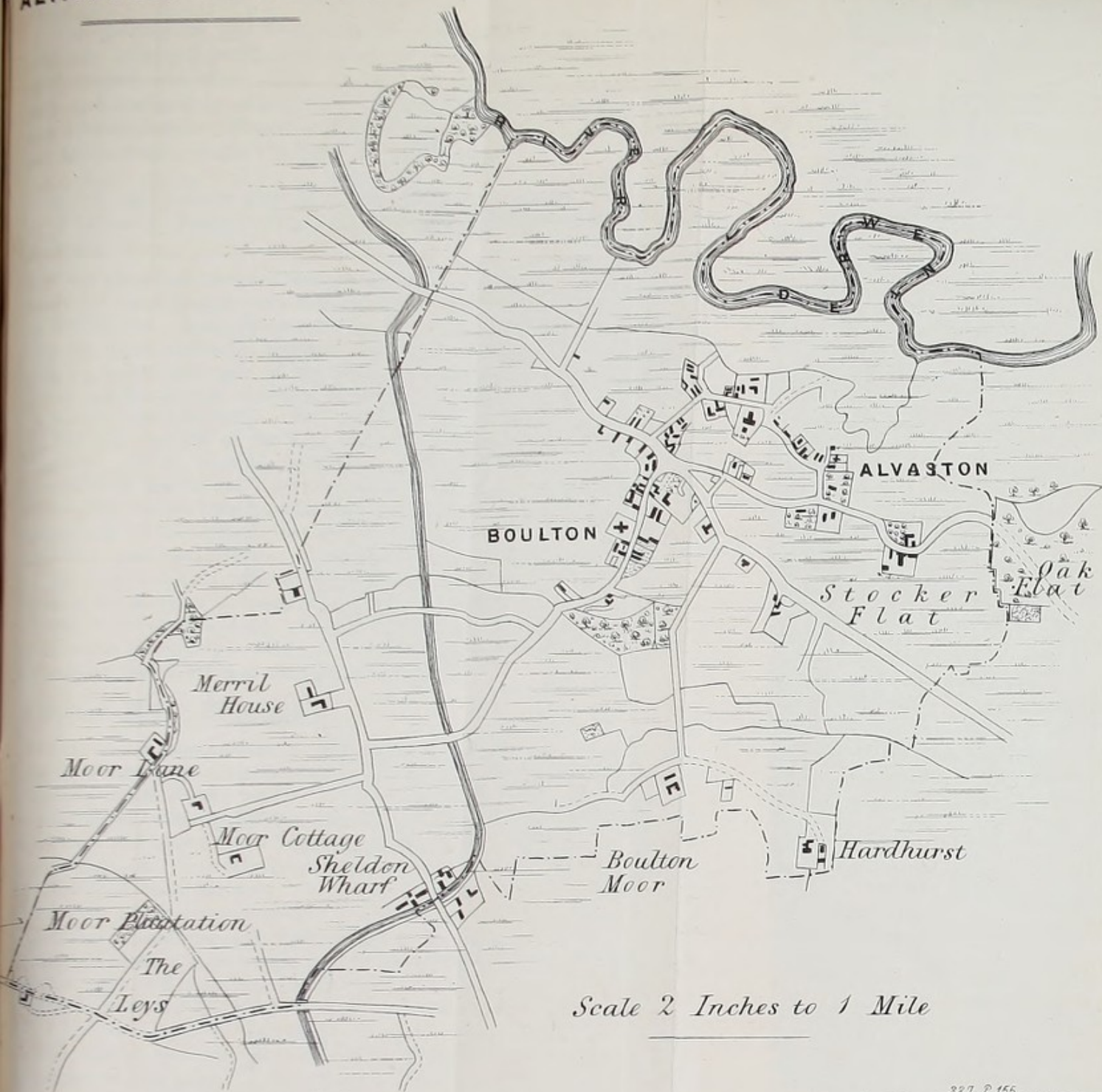
POPULATION AND NUMBER OF HOUSES.—The population of Alvaston at the census of 1841 was 490, and that of Boulton at the same time 171, making a total of 661. Mr. Poole, the incumbent, says there has not been much increase since the census: he should think not 20 in the two parishes. The following return shows the number of houses in each, and classifies them according to their rateable value:—

Annual Rateable Value.		Alvaston, No. of Houses.	Boulton, No. of Houses.
Under 3 <i>l.</i>	. . . . .	66	25
3 <i>l.</i> and under 4 <i>l.</i>	. . . . .	9	4
4 <i>l.</i> „	5 <i>l.</i>	2	3
5 <i>l.</i> „	6 <i>l.</i> . . . . .	..	3
6 <i>l.</i> „	7 <i>l.</i>	3	..
7 <i>l.</i> „	8 <i>l.</i>	4	..
8 <i>l.</i> „	9 <i>l.</i>	2	..
9 <i>l.</i> „	10 <i>l.</i> . . . . .	..	1
10 <i>l.</i> „	15 <i>l.</i>	5	3
15 <i>l.</i> „	20 <i>l.</i>	2	1
Total		93	40


AVOCATIONS OF THE INHABITANTS.—There is no trade or manufacture carried on in either place, but such as are necessary to every village. The avocations of the inhabitants are chiefly connected with agriculture, and therefore very conducive to health.

CONTOUR AND GEOLOGY.—The surface of the parishes is not very favourable for the discharge of surface-water, but would be sufficient, with properly constructed drains, for its

ALVASTON & BOULTON



Scale 2 Inches to 1 Mile



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discharge eastward with a fall of probably 14 to 15 feet in a mile.

The geological position is on the skirt of the coal-measures and the new red sandstone system, which are here overlaid with gravel and clay. The general character, however, of the soil and subsoil is absorbent, and therefore favourable to a dry atmosphere. From actual observations at Derby the annual average rainfall is from 28 to 30 inches.

STATE OF DISEASE AND MORTALITY, INCLUDING DESCRIPTION OF SANITARY STATE.—The Rev. *Edward Poole* says, in his evidence,—

“I am perpetual curate of the two parishes of Alvaston and Boulton. I consider the drainage very defective and injurious to the health of the inhabitants. Last autumn three of my own family were suffering from low fever, which Dr. Heygate said might be attributed to the foul ditch on the opposite side of the road from my house. One of those sick in my family was removed away by the doctor’s order, and recovered his health directly. Last summer the ditch was emptied out, and the filth was laid on the side, and by that means the nuisance was increased. At the Alvaston end my parishioners in its vicinity have been all in ill health, and I attribute their sickness, in a great measure, to this drain. I have been here fourteen years and a half, and have known it the whole of that time. The nuisance has altered as to the position where it is most disagreeable. It was formerly so near Mr. Holbrooke’s, but the improvements effected by him on his own property have removed it to the space between Mrs. Bright’s and Mr. John Chapman’s, a length of about 650 yards. It is altogether my apprehensions of this ditch, and of the injury it would do to the health of the inhabitants, that has induced me to forward the present inquiry.”

William Hollis, Esq., said,—

“I am a surgeon practising in Alvaston and Boulton. I have resided in Alvaston between five and six years, and have been in practice altogether about twenty years. I signed the petition for this inquiry. I know the open ditch that flows down from Boulton through Alvaston to the river. I have to pass that way often, and have frequently found it very offensive. It is calculated to be prejudicial to the health of the inhabitants of both parishes. It would be likely to produce low continued fever running into typhus. I have heard that many of the cess-pools of the houses have overflow drains that go into this ditch. I have had several cases of fever within my own practice, but I cannot say that it was directly to be attributed to the ditch. I have a case of fever now at Boulton near the drain that comes into the ditch. One other case that I had was near to the ditch. I think typhoid fever is a preventible disease to a very great extent by cleanliness, &c., especially in the houses of the poor. I do not know that there are persons permanently crippled from typhus fever, but, under some circumstances, such cases might occur.”

It appears, from the above evidence, that the same evils as

exist in large towns exist in small villages, and produce similar results ;—that preventible disease is not peculiar to places of dense population, but is a consequence of unremoved decomposing animal and vegetable refuse, vitiating the atmosphere which the inhabitants are compelled to breathe, and producing the same maladies in Alvaston and Boulton as among the poor inhabitants of the neighbouring city.

DRAINAGE AND SEWERAGE.—It has been already stated that an open ditch passes from the village of Boulton through Alvaston. It runs mostly alongside the public road, is in many places quite stagnant, and receives a large quantity of filth. I scarcely expected to find, in any places of the size of these villages, the cesspool system, with all its worst features in full development. A great number of houses have covered cesspools constructed in the gravel, and, when the filth ceases to percolate into the subsoil, those within reach of the open ditch make an overflow drain to it, from the cesspool, to carry off the fluid filth. Others, unable to do this, are compelled to empty the cesspools by hand labour. The word drainage is scarcely applicable, there is no drainage in Alvaston and Boulton,—it is more appropriate to say that the *stagnation* of refuse from the houses could scarcely be worse than it is. During my inspection the complaints of foul stench were very numerous, but, as nearly every witness alluded to the subject, I forbear quoting the minutes of my own observation. Mr. Hollis, the surgeon, in the continuation of his evidence, says,—

“The drainage of my own house goes into a cesspool on the premises. My house is almost a new one, and I should not like to let it for much less than 50*l.*, and yet I have no drainage to take away the filth from the premises. We have a drain leading into the same ditch, but it is only to drain the foundation of the buildings. The cesspool is on the premises. The whole of the filth of the house is absorbed by the gravel of the subsoil. I do not know the depth of that gravel. The cesspool has been once opened. There was a stoppage of the drain from the scullery. We had not occasion to cleanse the cesspool. The subsoil gravel is quite porous. The depth of the cesspool would be about 2 yards, and the water-well is about 4 yards to the bottom, with the water about 2 yards deep. I believe the cesspool stands full, and, if that be so, there would be about 2½ inches from the water-level in the cesspool to the level in the water-well. We have never perceived anything unpleasant from the cesspool, but, if it is not cemented, the water-level in the two would be about equal. In my opinion it would be very desirable if some improvement could be made in the open drain.”

Charles Holbrooke, Esq., said, in his evidence,—

“I have resided about twenty-four years in Alvaston. I signed the petition for this inquiry. I know the ditch here very well—too well—very much to my cost. Before I built my house the drain in Boulton—

street was covered over, but after the house was built the open drain through my property contained so large an accumulation of filth that it was intolerable, and I had it cleansed frequently at my own expense, though it had been done previously by the parish. I did not find cleansing satisfactory, because, the bottom of the ditch being nothing but gravel, the refuse accumulated again immediately. Some time after that, there being a good deal of fever in the place, we had a meeting in the school-room, at which there was a minute made that a number of persons should go round and view. There was a subsequent meeting at which the resolution was rescinded, and the thing was left to take its chance. Then, after that, I had no prospect of getting it done, and I employed a person to come and look over my premises and advise me what to do. In consequence of that advice I made a cess-pool, and covered the drain through my land, at a cost, including cess-pool, drain, making the ground good, and a water-cart, of from 70*l.* to 100*l.* So far as my house and premises are concerned I am very much satisfied; I should certainly have liked some assistance, but do not regret the expense. Mrs. Holbrooke was very ill, and my family and visitors were compelled to cover their faces when passing by it. Mr. John Wright, surgeon, of Derby, Dr. Heygate, and Mr. Jones, parish surgeon, all said that the ditch was injurious to my family. Between the river and my own house I do not know of any improvement in that ditch. I think it now in a very offensive and injurious condition."

I made some inquiry of Mr. *Joseph Robinson*, the surveyor of the highways, who said,—

"We do not keep the ditches by the sides of the roads in repair, except such as are named in the award of the Enclosure Commissioners. The foul drain that comes down Alvaston from Boulton is not in the award, and I consider that we have nothing to do with it. The occupiers of the land have cleansed it out generally. Mr. Curzon, agent to Lord Harrington, did it last summer from end to end. I have never done anything at it. It is very foul now, and wants cleansing; I never saw it worse, and I think never so bad. I dare say it would be as well covered over. If it would cleanse itself it would be better."

From a communication to your Honourable Board, from J. Curzon, Esq., agent to the Earl of Harrington, it appears that the drain belongs to his Lordship and two other proprietors, but that houses have been improperly drained into it. Mr. Curzon does not deny the liability to clean out the ditch, but concludes that the proprietors

"are not liable to the expense of covering their ditch in with stone, and that, if it be done by any other party, they will be entitled to be paid for their 4 feet of ground for the whole length of the ditch adjoining to their lands."

The length of this ditch up to Mr. Holbrooke's property is about 1160 yards, and according to the accompanying section the fall is about 13 feet.

Brown, glazed, earthenware socket-pipes, for drains, are about the same price in Derby as at the various works in the metro-

polis. Blue, unglazed drain-pipes may be had much cheaper at Messrs. Roe and Oakley's yard, near the railway station, as follows:—

	s.	d.	
3-inch diameter	0	3	per foot run.
4-inch "	0	3½	"
6-inch "	0	5	"
9-inch "	0	8½	"
12-inch "	1	3	"

These pipes fit into each other without any rim, the joints appearing to take up about 4 inches per yard. I have no hesitation in saying that better pipes might be produced for less money.

WATER SUPPLY.—On Lord Harrington's property there are two houses, one of which is occupied by John Chapman, whose daughter-in-law said that they had had to fetch all the water for two months, because the well was fouled by the ditch flowing into it.

The only mode of obtaining water in the two parishes is by wells, and by storing rain-water. The above is an instance of a well polluted, and from the evidence of Mr. Hollis the surgeon, and from other information, I cannot doubt that there are many other wells in Alvaston and Boulton into which the drainage from the cesspools percolates. The water-wells are deeper than the cesspools, and, in a porous soil, the only means of escape from the cesspools is in the direction of the nearest contiguous well. Mr. *Hollis* says, of his own supply,—

“The cesspool is on the premises. The whole of the filth is absorbed by the gravel of the subsoil. I do not know the depth of that gravel. We get water from a pump-well, also on the premises. I cannot tell what the well and pump cost separately from the house. The well is about 20 or 30 yards from the cesspool. The water is hard. We have a soft-water cistern, the making of which was also part of the same general contract for building the house.”

CONDITION OF THE ROADS—The length of highways repaired by the two parishes is about 7 miles. The length of turnpike roads is 1 mile 6 furlongs and 55 yards; and of occupation roads 6 miles 1 furlong and 165 yards. The average amount received for the last 8 years is 99*l.* 1*s.* 11½*d.*, and the average amount paid during the same period is 79*l.* 8*s.* 0¾*d.* The turnpike roads are kept in very good order, and the parish roads sufficiently well for the traffic upon them. The footpaths are defective, and the occupation ways are many of them capable of great improvement. Mr. *Joseph Robinson* says,—

“I have been surveyor of highways for Alvaston and Boulton seven years. We generally levy a rate of 5*d.* in the pound per annum, but

one year it was only $2\frac{1}{2}d.$, because a surplus had accumulated. A rate of $5d.$ produces $75l.$ We use brook-stone and gravel, got in the parish; it costs $1s. 8d.$ per yard, but I give $2s. 6d.$ per cart-load for stones gathered from the land. The work is done by the day. Labourers receive $9s.$ per week on the roads, but agricultural labourers obtain $10s.$ to $12s.$ per week. We grip and scrape the roads. We have no footpaths but what are made with gravel."

BURIAL-GROUNDS.—Alvaston churchyard contains 2 roods and 17 perches of ground, and the aggregate number of interments in the 21 years from 1829 to 1849 inclusive is 177. The average is therefore not more than $8\frac{1}{2}$ interments per annum. The area of Boulton churchyard is 2 roods and 21 perches, and the number of interments during the same period is only 77, or less than 4 per annum on the average. No evil can arise from these grounds remaining open for further burials.

MISCELLANEOUS REMARKS.—There is no local Act of Parliament in force, either in Alvaston or Boulton, for any purpose contemplated by the Public Health Act.

There is no watching or lighting in either of the parishes.

The Earl of Harrington is lord of the manor of Alvaston, and Sir John Crewe lord of the manor of Boulton. There is a court-leet for each held at Litchurch, but they exercise no jurisdiction over nuisances, or matters affecting the health of the inhabitants.

The boundary circumscribing the two parishes is clearly defined, as will appear by the plan, but, relatively, the two are mixed up together, in all parts within the general boundary, in a way that is indescribable, except on a very large scale. The parts of each could only be distinguished by spots and patches of different colours. It is well, therefore, that they have united in one petition for the Public Health Act; all difficulty in applying its provisions is thereby avoided.

REMEDIES.

It is evident from the preceding statements that there are evils in Alvaston and Boulton quite beyond the reach of any existing local authority. Such evils may, however, be remedied by the application of the Public Health Act, and I am of opinion that such application would be very beneficial to the two places.

I proceed to point out in what way some of its more important provisions may be carried out with advantage.

WATER SUPPLY.—There is no high land in the vicinity from whence a supply of water could be given by any public works

constructed on the principle of gravitation, and the smallness and scattered condition of the population renders it impossible to construct waterworks by which the supply could be raised mechanically, and yet given within the terms of the Act.

Much, however, may be done by a local Board of Health to improve the supply. In all cases where private pumps already exist, the water can be carefully preserved from contamination by the removal of all refuse in proper channels. Where there are open wells without pumps, they should be covered, and have proper pumps put down. Additional wells and pumps should be provided, if necessary, in both villages, accessible to all the inhabitants without inconvenience, and such wells should be kept in repair at the cost of the public. Indeed, everything should be done that the circumstances of the locality will admit of to secure to the people as much water as possible, of the purest quality to be found, in the most convenient mode that can be devised, and at the smallest cost at which it can be obtained.

DRAINAGE AND APPLICATION OF REFUSE.—An earthenware pipe of about 9 inches in diameter should be placed along the line of the present ditch from Mr. Holbrooke's to some distance beyond the houses. Into this, as far as possible, all the house-drains should be conducted by earthenware pipes of about 4 inches diameter, securely trapped. All cesspools should be abolished without delay, otherwise the subsoil will ultimately become so saturated with filth as to render the spring-water unfit for use.

If the money for such drainage were borrowed on security of the rates, in the manner authorised by the Public Health Act, and repaid by equal annual instalments of principal and interest in a period not exceeding 30 years, I am of opinion that the whole might be accomplished, so as to remove immediately all decomposing refuse from both villages, at a charge not exceeding three halfpence per house per week. At the end of such period the payments would cease, but the advantage derived by the inhabitants would be permanent.

It is my duty, however, to point out that this refuse, which, by its continuance in the vicinity of the houses, produces disease, may after removal be applied with the greatest advantage to the agricultural land. With a fall of 13 feet in about 1100 yards from Mr. Holbrooke's premises, the main drain may deliver its contents at about a quarter of a mile from the houses, without any unpleasant effects, and the sewage can be there used for irrigation. The following evidence as to its fertilizing powers was given by Mr. *Holbrooke*, and therefore will not be called in question by any of the inhabitants:—

“I use the fluid from the cesspool in wet weather on the pasture land,

and at other times we mix it with tan, and store it up until we can lay it on. When the cover of my cesspool is taken up the stench is very great. I have a manure-cart, and obtain as much of the refuse as I can. The area of the field is about 4 acres, and it will bear three cows, two horses, and two sheep, and there is a capital pasture; we are obliged to mow the tussocks, and either give it to the horses, or make hay of it to top the stacks with; it grows very rank and strong. This field, called Nun's Field, keeps half as much more stock as any land in the parish, except the Smedley Croft, which has been very well tilled and without gravel near the surface. Since I have had this cesspool I have not used horse manure. I think that liquid is preferable to solid manure. We put it on in showery weather."

I cannot doubt that, with such local experience of its effects, all the liquid refuse of the houses could be disposed of to advantage by a local Board of Health. All the inhabitants contribute to its production, and therefore whatever income can be derived from its agricultural application should go in liquidation of the public rates.

CONCLUSIONS AND RECOMMENDATIONS.

I have now to lay before your Honourable Board the conclusions at which I have arrived, and the recommendations consequent thereon:—

I. That there is preventible disease in Alvaston and Boulton.

II. That both villages ought to be very healthy.

III. That the cesspool system is in operation, and produces its usual baneful effects.

IV. That a very foul and injurious open ditch, in a stagnant condition, extends from the village of Boulton through the village of Alvaston, and that at present there is no local authority to convert it into a proper underground drain.

V. That there is no drainage of buildings, &c., and that without preventive arrangements the porous subsoil will become saturated with filth in the vicinity of the houses, and ultimately poison the springs of water.

VI. That the sanitary condition of the inhabitants would be much improved by better arrangements for water supply, and by the drainage of both villages.

VII. That these objects may be effected under the Public Health Act, at a very trifling cost to the inhabitants, probably not more than twopence per house per week for both purposes.

VIII. That there is in the locality sufficient experience of the great fertilizing properties of the liquid refuse of houses to warrant the expectation that all the sewage of Alvaston and Boulton would be readily disposed of on advantageous terms for the benefit of the ratepayers.

WHEREUPON I RECOMMEND :—

1. That the Public Health Act (1848), except the section numbered 50 in the copies of that Act printed by Her Majesty's printers, should be applied to the parishes or places called Alvaston and Boulton in the county of Derby, and that the said two parishes or places be formed into one district for the purposes of the said Act.
2. That the local Board of Health to be elected under the said Act shall consist of nine persons, and that the entire number shall be elected for the whole of the said district.
3. That the first election of the said local Board shall take place on the twenty-fifth day of March, in the year of our Lord one thousand eight hundred and fifty-one.
4. That one-third of the number of the said local Board shall go out of office on the twenty-fifth day of March in each year subsequently to that in which the said first election takes place.
5. That every person shall, at the time of his election as a member of the said local Board, and so long as he shall continue in office by virtue of such election, be resident as in the said Public Health Act (1848) is required, and be seised and possessed of real or personal estate, or both, to the value or amount of not less than 500*l.*, or shall be so resident and rated to the relief of the poor of one of the said parishes or places upon an annual value of not less than 15*l.*

I have the honour to be,

My Lords and Gentlemen,

Your very obedient servant,

WILLIAM LEE,

Superintending Inspector.

The General Board of Health,
 &c. &c. &c.