

Dr. Gresswell's report to the Local Government Board on the general sanitary condition of the Buckingham rural sanitary district / [D. Astley Gresswell].

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Dr. Gresswell's Report to the Local Government Board
on the General Sanitary Condition of the Buckingham
Rural Sanitary District.

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R. THORNE THORNE,
Assistant Medical Officer,
August 22, 1889.

The Rural Sanitary District of the Union of Buckingham, which forms the subject of this report, comprises 49,014 acres of the N.W. corner of Buckinghamshire.

Its substratum is formed by the Great Oolite, Cornbrash, and Oxford clay. These formations indeed appear largely at the surface, but over a considerable area they are covered by Drift, in the shape of gravel, sand, loam, and alternating beds of clay. The land is very largely in pasture, much of it hitherto under tillage having been laid down to grass within recent years.

The inhabitants are in chief part engaged on the land. They reside in scattered hamlets and villages, of which the largest does not contain 900 inhabitants. In point of numbers the population has been falling off slightly for some years past. It numbered 9,933 in 1871 and 9,833 in 1881; and it has, it is said, further fallen off since. This fall is attributed to general agricultural depression and conversion of arable into pasture land. It is computed by some that the land, as now laid out, could be satisfactorily worked by two thirds of the present agricultural population. The populations of the larger parishes are shown in Table A.

TABLE A.—Showing the Populations, at the two Censuses of 1871 and 1881, of the 13 larger Parishes of the Rural Sanitary District of Buckingham.

Parishes.	Census Populations.	
	1871.	1881.
Adstock - - -	383	352
Akeley-cum-Stockholt - -	378	387
Leckhampstead - - -	447	340
Maids Moreton - - -	511	448
Marsh Gibbon - - -	876	743
Padbury - - -	601	530
Preston Bissett - - -	485	344
Radclive - - -	339	367
Steeple Claydon - - -	906	852
Stowe - - -	370	338
Thornborough - - -	687	577
Tingewick - - -	945	787
Twyford - - -	346	339

The surface of the district is undulating, and the villages are situated in chief part on the slopes of the hills, while brooks or brooklets thread their course through or near by many of them, and for the most part to the Ouse. The villages in general stand upon Drift, a few upon Oxford clay or upon hard rock, or on the loose material, into which the latter has broken and crumbled

towards the surface. The presence of clay beds in the Drift and of Oxford clay or dense rock beneath it renders the soil and subsoil of the villages retentive of water.

Sanitary Circumstances.

The Dwellings.—Of the 1,969 dwellings, which I am informed exist in the district, as many as 1,656 are described as cottages; and it will be to these latter that reference will be specially made. Most of the cottages, and here it may be noted that 1,378 of them are rated at yearly values under 5*l.*, are four-walled, two-storeyed structures, built of mud and wattles, of brick, or of local stone; floored with irregular flags or brick; and roofed, half or more of them, with thatch. They are divided into two or three compartments, the upper, approached directly from the ground floor room, being quite commonly in the penthouse-roof with the bare rafters presenting inside; in many cases there is an additional small compartment, either within the four walls of the building or as a "lean-to" or "barn" outside, which is used as a back kitchen, or as a store- and wash-house. Six per cent. or so of the ground floor rooms have no back door or back window; and perhaps a third of them have no windows which can be opened; meanwhile bedrooms commonly have no flue, and many of them have but one window, which is both small in size (4 or 6 sq. ft.) and not capable of being opened.

The lighting and ventilation of the houses are therefore seriously at fault; bedrooms being offensive even when entered towards evening. The ground floors are very generally damp owing to the want of properly prepared basements. There is also a great want of cleanliness owing to deficient use of water and limewash.

A large number of occupied dwellings are greatly dilapidated; such dwellings are to be found scattered over the district, but the villages of Beachampton, Thornborough, and Tingewick may be specially named in this connexion. At Beachampton a considerable proportion of the cottages must be regarded as unfit for habitation, or unsafe by reason of their dilapidated condition. In addition it needs to be stated that the inmates of many of the cottages are in excess of the accommodation afforded them.

Instances of dwellings which for one or more reasons are a source of nuisance or of danger to health may here be mentioned. The "parish house" of Charndon, a dilapidated one-storeyed thatched cottage, is rented of the guardians for a yearly sum of 20*s.* It is divided into three compartments, of which one, formerly used as a "barn", is in ruins. The bedroom, occupied by the whole family (man, wife, and four children), has a cubic capacity of about 500 feet, a single window of about 3 square feet (the whole of which, however, admits of being opened), and a floor formed of marl. Along the length of this cottage at the back, and immediately under the bedroom window, there is a ditch, in which various kinds of filth are placed, including human excrement, for the making of manure.

Another thatched two-roomed mud cottage, hard by, with bulging walls, worn out thatch, and marl flooring, is occupied by a family of six. A woman, her four sons (one 20 years of age and another 16), and a daughter sleep in one room, which is in the roof, and into which light and fresh air are admitted only on one side through two window openings, together about 2½ feet square.

At Beachampton a cottage, much of which is in ruins, and which is deluged with rain in wet weather, is occupied by a man and his wife at a yearly rental of 35*s.* The bedroom has no flue and but one window, which is about 1 square foot in area and cannot be opened.

At Padbury a dilapidated cottage is occupied by a man, his wife, and four children at 1*s.* rent per week. The floor of the bedroom, which is in the roof, and in which all sleep, is so dilapidated that there is danger of its giving way almost at any time.

At Thornborough a cottage is occupied by a man, wife, and six children at a rent of 1*s.* per week. It has two bedrooms, in which all the family sleep, and which together have a cubic space of 990 feet. Wind and rain pass freely through the roof and walls, and rafters, rotten and covered with toadstools, present on the inner surface.

At Akeley a bedroom of 794 cubic feet capacity, with one small window, of which only 2 square feet can be opened, is occupied by a man, woman, and five children.

This defective condition of the cottage property has not, however, been disregarded by the landed proprietors or by the Sanitary Authority. In some villages substantial and well-appointed structures have been erected, such as the Acland Buildings, which are let at a yearly sum of 6*l.* The Authority have also of late given orders for the repairing of some of the dilapidated cottages, and for the introduction of more appropriate means for their



ventilation. But much remains to be done in the way of repairing or of re-building, if the people of this district are to be properly housed.

Areas around Dwellings.—The cottages, as a rule, stand by the roadside, each on its own plot of ground, which extends, in a large number of cases, well to front or rear. Only exceptionally are the cottages closely crowded together. In such cases the curtilage is often very limited; and similar want of curtilage, brought about in another way, is common to a considerable number of the dwellings erected on narrow strips of waste land by the roadside. Generally throughout the district there is an inefficiency of surface-drainage about dwellings; ground-surfaces in a large proportion of cases, even where they immediately adjoin the dwelling, not being properly sloped, guttered, or paved; indeed, they frequently so slope that rain water flows towards the dwelling. This renders it difficult or impossible to maintain dryness and cleanliness around the house, and thus, aided by drippings from unspouted roofs, arises a condition of unnecessary dampness of basements and of one or more walls of the dwellings.

House Refuse.—Ashpits are all but absent on the cottage properties. There are refuse holes and refuse heaps, in or upon which waste matters from the house, pig manure, and the like, are cast and allowed to accumulate to form a dressing for the garden. These accumulations are frequently near to the dwelling, and this not merely in instances where the curtilage is limited; offensive emanations from them pervade the air, and soakage from them flows often towards the dwelling and percolates into the soil.

Pig-keeping.—Pigs are kept by many of the cottagers. By several they are kept in the immediate precincts of the house, even within the "barn" adjoining the cottage; and in particular instances the pigstyes adjoin two sides of a cottage.

Excrement is disposed of chiefly in outdoor privies, situated on almost any part of the premises; the receptacle being a hole or a bricked pit sunk in the earth, and generally open or but loosely covered at the rear or at one side of the privy structure. These filth receptacles permit entrance of rain water and of ground water; and from very many of them the fluid contents freely escape into the surrounding soil. It is no uncommon thing for a privy, or several privies together, to discharge into a ditch on or bordering on the premises, no matter how restricted the area of the premises be, and such ditch may be made the depository for filth in general. Nor is it at all uncommon—it is notably the case at Tingewick—for the privy receptacle to be connected with the common drain of the village—the "village sewer."

At Tingewick there are privies, the receptacles of which discharge into a large open cesspool; this into a second similar cesspool; and the latter in turn into the "village sewer." Privy seats also in this village are placed directly over the sewer.

The privies may be, as already remarked, on any part of the outdoor premises; they may adjoin the dwelling; they may be in the "barn," whether the barn be altogether of the nature of an outhouse or be in direct communication with the cottage; generally they are within a few yards of the dwelling. The privy structure, not infrequently of wood, is in many instances altogether dilapidated.

Privy accommodation in some villages is deficient; and there are cottages without any.

But of late the Authority have taken measures to get rid of these unwholesome privies, and to increase the privy accommodation. As a result, there have been constructed some 50 small brick and cement receptacles, the floors of which descend, however, a foot or so below the ground level; and still more recently some 50 pail-closets, after a pattern devised by Mr. Varney, the Inspector of Nuisances. The introduction of the latter form of privy, as also of a few box-privies, has effected a marked improvement. It should also be stated that under supervision of this Inspector of Nuisances a considerable number of cesspool ditches have been cleared out, and action in discouragement of recurrence of the nuisance has been generally undertaken.

Removal of Refuse and Excrement.—left, as it is, wholly in the hands of the occupiers, is greatly neglected. The chief excuse for this neglect, offered by the cottagers, is the want of ground whereto they may remove these

matters. The excuse is valid in a large number of instances; but scavenging in general, whether or not there be ground available for disposal of the refuse, is seriously at fault. Occupiers individually do but little towards keeping their premises clear of filth; and there is no community of action among them such as, it would appear, might be readily instituted with a view to general scavenging. Neither does the Sanitary Authority undertake to scavenge for them; nor could I learn that, except in a few instances, action of any sort is taken to reduce the difficulties which many of the cottagers assert they have to contend with in cases where their garden ground is limited in extent and does not suffice for the safe disposal of excrement and refuse.

Drainage and Sewerage.—Surface drainage for the premises is, as said above, seriously at fault. Liquid refuse is removed from the house by means of drains, connected with indoor sinks or with outdoor catchpits near to the doorway; or quite commonly, in the absence of drains, it is cast anywhere about the premises, or even into the roadway. Indoor sinks do not in all, perhaps, exceed 300 in number; most of them have direct and untrapped connexion with the house-drain. Outdoor sink catchpits are rarely trapped or watertight; many of them are broken; and as the surfaces about them are, as a rule, neither properly paved nor sloped, the soil roundabout is sodden with filth. The house-drains consist generally of unsocketed pipes; and, owing to intrusion of foreign matters at the open joints and to improper laying, they are frequently becoming blocked. The ground along the course of such drains is necessarily permeated by filth, which at certain seasons is in a state of putrescence (at different seasons probably in different phases of putrescence); and the drain inlets (whether they be indoor or just outside the doorway) afford the chief outlets for gases. Some of these foul drains lie beneath the floors of the cottages, and are a source of great nuisance.

Where drains have not been supplied, slop-holes, slop-tracks, and slop-ditches are prominent features of the premises.

The house-drain discharges into a ditch on or adjoining the premises, or into the village sewer; in some instances a cesspool, intercalated in the course of the drain, forms a receptacle for the settlement of heavier matters.

The village sewers, so-called, are under the management of the highway surveyors. A considerable number of them have within recent years been reconstructed and extended as 12-inch, 9-inch, and 6-inch socketed pipes; but in some cases old rubble highway drains, though now receiving sewage matters, have been allowed to remain constituent parts of their respective systems. These sewers receive drainage from large numbers of dwellings, from privies, waterclosets, farmsteads, and slaughter-houses. They lie at a depth of 1 to 2 or 3 feet, and they discharge into ditches, generally by the roadside and frequently in the proximity of dwellings, or into the village brooks. In no case, it seems, are they provided with means for flushing in dry seasons, and at their untrapped inlets, as also at their outlets, they are very generally a source of nuisance. Careful consideration needs to be directed, in particular at Tingewick, Preston Bissett, and Steeple Claydon, to the defective condition of the sewerage and the faulty mode of disposal of the sewage; and generally throughout the district much requires to be done towards improving the method of removal of sewage matters.

The sewer at Tingewick receives a large part of the filth of the village; privies, slaughter-houses, and, perhaps, 60 dwellings drain into it. It gives rise to nuisance along its course, and markedly at its outlet, immediately by the side of which are three occupied cottages, where the inmates complain of the stench arising from it, and where one family, on recently settling there, suffered from sore throats which they attribute to this nuisance. In wet weather a considerable body of water flows through the whole length of the sewer from a pond at the upper end, but in dry seasons there is very little actual flow at the outlet. This sewer is said to be constructed of brick.

At Preston Bissett the main drain or sewer appears to be improperly laid. It discharges in the proximity of cottages into a brooklet at the lower end of the village, into which there passes also drainage from privies and a knacker's.

At Steeple Claydon a pipe sewer receiving overflow from filth receptacles (privies and a water-closet) from stables, piggeries, and a slaughter-house opens at the lower end into a culvert. The latter discharges at the lower end of the village, near to several dwellings, into a ditch by the roadside, and in its course it passes through the cellar of a public-house, in which there is a penetrating stench, especially when the wind lies in a certain direction. A stagnant pond also at the back of several houses receives excrement, and a sewer-ditch at the upper part of the village gives rise to great complaint.

At Padbury there are several filth ditches in the proximity of dwellings, especially to be noted at Lower End and Lower Way. In the latter part, where there are some 15 cottages, the roadways are most unwholesome, owing to sewage matters being cast directly upon them, and to their being bordered by sewage ditches.

At Marsh Gibbon the sewers form several independent sections, and consist of 12-inch or 9-inch pipes. They discharge into roadside ditches in or near to the village. Farmyards in this village were overflowing on to the roadways at the time of the inspection.

At Twyford the sewers, constructed of 12-inch pipes, open into ditches, one of which is near to the village and by the side of the road. On the opposite side of this road there is a pond which receives house drainage and excrement.

At Maids Moreton there are two main drains or sewers, each formed in part of the old square stone drain without definite bottom, and in large part of 12-inch socketed pipes. Most of the drainage falls into a cesspool at one end of the village, and this overflows into a ditch by the side of the main road.

At Adstock there are ditches receiving various sorts of filth.

At Beachampton and Thornborough much of the house drainage appears to pass directly into the brooks, which run through the lengths of these villages; and at Thornborough there are not a few premises very foul owing to the want of drainage.

Water Supply.—Water for domestic use is in chief part derived from wells, sunk most of them in Drift, a few in solid rock. The bulk of it is taken direct from the wells; about a twelfth part is taken from taps, to which the water is conducted in iron pipes by gravitation from wells at higher levels, the water being raised from some of the wells by syphons. In several instances it is taken from spouts fed by pipes laid in the hillside, and in other instances from open ponds and watercourses.

The wells, from which it is taken direct, are numerous; they are for the most part draw-wells; in general they are 6 to 10 feet deep, and are sunk on the cottage premises, in farmyards, or by the roadsides. Provision has been but rarely made for preventing entrance of water from the surface or (by puddle or cement) from the superficial layers of earth; the walls of many of the wells are merely dry-steyned; several wells are but holes in the ground. And yet the soil about the wells is very generally permeated by sewage matters, which have been thrown carelessly upon it, or which have escaped into it from badly constructed drains, outdoor sink catchpits, privy pits, slop and refuse holes, sewer ditches, muck heaps, or piggeries. And while the water of these wells is commonly muddy in wet weather, in dry seasons it commonly fails. The wells, moreover, are in very many instances not reasonably accessible; they are often distant 200, 300, 400 yards from the cottage.

In several instances, too, in which water has been piped into a village, the supply has yet to be made readily accessible, and in some cases the water requires to be made palatable or wholesome.

The supplies for the several villages are as follow:—

At Adstock, where there are some 85 dwellings, the water, for half of them, is fetched from a pump well by the side of the road, sunk 8 feet in sand and gravel. On one side of the well there is rising ground, on which, not more than 12 yards or so from the well, are filth nuisances. Some cottagers have to go 600 yards there and back for this water. Six other cottagers get their supply from a shallow, roadside dip-well. The drainage from several cottages, and from a slaughter-house, passes close by this well, in an open ditch up to it, and then by a pipe past it. There are also a few other pump- and dip-wells amid filthy surroundings.

At Akeley some 40 cottagers derive their water from a dip-well, and to get it many of them have to go a distance there and back of 300 or 400 yards; within 10 yards of the well in one direction there are an outdoor sink catchpit, a piggery, and an open privy midden. Six other cottagers take their water from a well in a cultivated garden, and two more from a pump well, close by which runs a stable drain.

At Barton 12 cottagers must take their water either from the outlet of some agricultural pipes laid superficially in a field, or from a roadside pump-well about 30 yards below a farmyard. Both supplies fail, it is said, in dry weather.

At Beachampton about 12 cottagers are supplied with water from a roadside dip-well, 5 feet deep, by the side of a cultivated garden; other six from a roadside dip-trough fed by the overflow from a well in a garden, the structure of the overflow channel not being evident; others, again, are supplied from a dip-well 5 yards from a piggery.

At Chackmore, where there are about 45 dwellings, the water for, perhaps, a third, or at times a half, of the cottagers is taken from a spout. The source of this water cannot be stated with precision. From information kindly given to me by the guardian of the parish, it would appear that the water finds its way to the spout by means of an old stone culvert, proceeding from a farmyard or from its immediate precincts; this farmyard at the time of the inspection was covered by a swamp of green manure drainage. It would appear also that a house drain crosses over the culvert to discharge at a few yards' distance into a ditch, alongside of which there is a privy of the very worst type. Ten other cottagers take their supply from this spout when their own well fails or becomes fouled; the latter is a shallow hole in the earth in a corner of a garden by the roadside, just a hole, nothing more. Five others pump their water from a well, immediately by the side of

which runs the drain from an occupied house; this house drain did discharge into the village drain, but the guardian, above referred to, in his capacity as surveyor had the connexion cut off, and the drain has been left for months to discharge into the soil; how long the well will be secure against contamination from this direction remains to be proved.

At Charndon water from a covered well (sunk 20 feet deep in drift) at one end of the village has been piped down to a single tap almost at the other end; so that only those persons at the end of the village where the tap is have ready access to it, persons near the well having to go down hill some 250 yards and back again the same distance up hill for this water. But the water is said to be unpalatable, and to form a scum on the surface when allowed to stand. And for one cause or another, unpalatability or unreasonableness of distance, the cottagers actually draw their water either from an open pond or from a dip-well, to which animals get access, in a field.

A few cottages at Chetwode are supplied with water conducted by agricultural pipes laid superficially in the land; these pipes become choked at times by the roots of trees and other matters, and the cottagers have then to draw their water from a brooklet.

At Dadford seven or eight cottages are supplied with water from a dip-well in a garden, 6 feet deep and 5 yards from a privy vault; five or six others from a dip-well in a garden, 5 yards below a piggery and close by an outdoor sink; 10 others are supplied at a spout fed by agricultural pipes laid at a depth of 6 feet or so in the ground.

At Edgcott water has been conveyed by iron pipes from a well, sunk in loam and clay, to a tap in the centre of the village. The water on issuing from the tap contains so much iron that the cottagers will not use it. As an alternative they have recourse to one or other of three ponds in pasture fields or to a particular pond by the roadside. These ponds are in a very dirty state; they are full of minute organisms, and cattle and ducks and geese from neighbouring farmyards resort to some of them. Whether the tap-water derives its iron from the soil or from the iron pipes may be questioned. I was not able to get information as to its having been tested at the well; and the occurrence of ammonites impregnated with iron pyrites in the clay, which was thrown out on digging the well, would indicate the possibility that the iron is not wholly added in the pipes. Still, seeing that the water is not allowed to run continuously at the outlet, which is as already said provided with a tap, it is quite likely that much of the iron does proceed from the pipes. Filtration of this water has not been tried. It needs to be noted, moreover, that, even if the water at the tap were of the best, its remoteness from certain of the villagers, who to get it would have to go a distance, there and back, of 800 yards, is matter for serious consideration.

At Gawcott Road some 16 cottagers (besides many others in the Urban Sanitary District of Buckingham) take their water from the Bath Lane spout, where it issues in a copious and it seems a never failing stream. Specific pollution of this water in the lower part of its course by leakage from a drain was found by Dr. Parsons to have been the cause of the extensive outbreak of fever which took place among persons who drank of it early in the year 1888; and he advised the Authorities that the spring which feeds the spout should be intercepted at the highest practicable point in the hillside and the water there received into a tank and thence brought down to standposts, with a view to secure the safety of the water from pollution and to afford a more readily accessible supply. Instead of this, the upper part of the water conduit (some 25 yards long) has been allowed to remain as it has always been, *i.e.*, a mere rubble drain lying at a depth of only 2 to 3 feet in the field (a pasture and meadow field), and the lower part only has been replaced by galvanized iron pipes.

At The Hamlet (Hillesden) there are several cottagers, who have to get their water from a spout which is fed by a few agricultural pipes laid 4 or 5 feet deep in a garden close by a privy vault and a piggery; the water at times, it is said, "smells like privies."

At Leckhamstead the water for six cottages is taken from a pump well by the roadside. There seems to be reason for supposing that the soil-drain of a water-closet or the sink-drain, or both, belonging to a house some 8 yards from this well are leaking; the stench in the kitchen of the house being over-powering, and the water pumped up from a well in the kitchen having it is said an offensive smell; it is supposed that this drain passes by the side of the roadside well to open into the brook. Another well (a dip-well) in a garden supplies 18 cottages.

At Lillingstone Lovell water has been conveyed, it is said in part by iron and in part by agricultural pipes, from a covered well to a spout in the centre of the village. Most of the villagers are dependent on this supply, and several have to go 300 yards, there and back, to get it. I was not able to obtain very definite information as to the well or the pipes, but if carefully protected from risk of pollution there seems to be no reason why this supply should not be rendered more readily accessible. There are, it is true, five other wells in the village, but they cannot be considered as safe sources for drinking water.

At Maids Moreton the supplies are unsatisfactory. For instance, eight cottagers have recourse to a well in a farmyard, the water of which is thick in wet weather; 15 others to a pump well 5 yards from a privy vault; five others to another pump well 5 yards from a privy vault; indeed in this place I met with scarcely a single source of supply that could be pronounced satisfactory. At one part, called Well More, some 20 cottagers take their water from a spring which issues at a depth of about 3 feet from the lower end of a very small garden. This garden is under cultivation; it receives excremental dressings; there are a piggery and a cottage on it; there is another piggery not 15 yards above it; there is a house-drain about 18 yards above it, and there are a privy-and-slop ditch and a third piggery some 35 yards above it: while about 2 yards below the dipping place a drain carrying much of the slops from several cottages opens into the tiny stream which takes its rise at the spring. At the time of inspection two or three socketed pipes were being laid in the track of the spring, and a filter was being fitted at the outlet.

At Marsh Gibbon about 40 cottagers derive their water from a roadside dip-well, which is within 10 yards or so of a privy vault; 25 others from a well sunk in a farmyard soaked with manure drainage; 3 others from another similar source; 30 or 40 others from a deep well, which, though it may yield wholesome water—it is sunk I am told 20 feet in solid rock and concreted throughout, and it is further extended by a bore—is distant from many of them 300 or 400 yards (600 or 800 there and back). At the other end of the village the cottagers are supplied for the most part at standpipes, to which water is delivered by gravitation in iron pipes from an open well. These standpipes are somewhat remote from several of the cottages, and the water is liable to

pollution at its source owing to the fact that some 20 cottagers derive their sole supply—and for this they have to go a distance there and back of about 300 yards—by dipping into the well which furnishes it.

At Padbury, where there are about 120 cottages, the supplies are drawn from a variety of sources, most of them as dangerous as they can well be. For instance, a pump-well, within 6 yards of which are a slop-hole and an overflowing privy vault, supplies four or five cottages, and in dry seasons perhaps 20; a dip-well, which is said in wet weather to yield water "like ditch water and smelling like boiled cabbages," supplies two cottages; another dip-well, immediately by the side of which are a slop swamp and pig drainage, supplies six or eight cottages; a shallow trough fed through an open course by a surface spring in a rickyard supplies two cottages; a dip-well about 3 feet deep, 5 yards from which are a piggery and a filth hole, supplies six or seven cottages. These are the sorts of water supply on the cottage premises; most of them are foul in wet weather, and they are apt to fail in dry weather. There are, however, three public supplies derived from the following sources, viz., (1) a roadside dip-well which fails in summer, (2) a roadside dip trough fed by field pipes laid in a grass field above, and (3) the Lion pump well which is by the roadside, which is said to be only 6 feet deep, and which in 1882 had to be cleared out because it was receiving the back flow from a blocked drain, into which the well overflowed and some house drains discharged; the latter were taken up at the time and relaid in another direction. Many cottagers, having no satisfactory private supply, and not a few of them having no supply at all, are obliged to have recourse to one or other of these public waters, and, in so doing, to go a 15 or 20 minutes' journey, while in dry seasons perhaps two thirds of the cottagers are dependent upon the Lion well or the roadside dip trough. For want of a better or nearer supply some take water "for slopping purposes" from a ditch, which receives sewage matters.

At Pounden, where there are but about 10 cottages, water is derived from a roadside well; though readily admitting of being made more accessible it is a 10 minutes' journey off for some of the people.

At Preston Bissett the water for 11 cottages is taken from a roadside dip trough. This is fed from a spring which issues from drift gravel about 70 yards above the trough, and the water finds its way down by an open ditch in the upper and longer part of its course, and by a few yards of iron piping in the lower part; the ditch is in a pasture field, not many yards below a cemetery, and the buckets used in a knackery on the opposite side of the road have been known to be rinsed at the dipping trough. Eleven other cottagers take their water from a well in a cultivated garden; 11 others from two wells, by the side of each of which slops are carelessly disposed of; six others from a dip-well, 8 feet deep, by the roadside. One cottager gets his supply from a dirty hole by the side of a manured garden.

At Shalstone the water supplied to the lower end of the village proceeds, it appears, direct from a cattle trough in a pasture field.

At Steeple Claydon most of the cottagers, perhaps 60 or 70, take their water from two standpipes fed through iron pipes from a well, sunk 15 feet deep, with headings into the drift gravel and sand, in the hill at the top of the village; in dry weather the lower standpipe continues to run, but the upper one does not, a matter which might, perhaps, be obviated by lowering the height of the standpipe. Some of the villagers have to go considerable distances to get this water; in a dry season many have been "up all hours of the night" to get it from the upper standpipe, and when this supply fails they have to go almost a mile for water. There is also a public pump-well at the top of the village; a sewage swamp lies some 8 yards to one side of it. Ten or 12 cottagers get their water from a pump-well in a garden; a sink catch-pit is close by the well and vault privies and slop holes are round about it.

At Thornborough the water for about 30 cottages is taken from one or other of two dip-wells on the village common; one of these wells is about 20 yards below the burial ground, and about 10 yards below the school privy, which has evidently been overflowing on all sides. Six cottagers take their water from a roadside dip trough, the supply to which quickly fails in dry seasons; two others depend upon a well, about which lies a large sewage swamp; three others upon a well close by an outdoor sink, an open drain and cesspool: and so on.

Tingewick is supplied in the main from dip-wells, sunk in soil which must be permeated with filth from slop holes, privy vaults, and cesspools.

At Twyford, where there are about 60 cottages, water has to be fetched from the church well at the very lower end of the village; this well is sunk 10 feet deep in loose drift about 11 yards from and below the cemetery; some of the villagers have to go close upon a mile for this water.

At Water Stratford a well, perhaps 20 feet deep, has been sunk in a field, and the water has been piped to a spout in the middle of this small and scattered village. The people living at the two ends of the village have to go 450 yards or more, there and back, to get this water, and in dry seasons this supply fails.

The sanitary circumstances of the schools deserve special mention. At Thornborough the school, which has an average attendance of 86 children of both sexes, is supplied with but a single privy, and the receptacle (a vault) has evidently been overflowing on all sides. At Twyford the privy for the school-girls is so placed that emanations from it must needs enter the school-room. The privy receptacles at this school discharge into a closed cesspit, the overflow from which is carried off by piping into a ditch. The gases formed in the cesspit, which has not been cleared out for four years, can escape only by way of the privies. At the Padbury school the privy receptacles are vaults; the urinal discharges, it seems, directly into the roadway; and the pump, from which the children obtain water while at school, is not 10 yards from the privy vault. Other schools have defective privy arrangements, as at Maids Moreton, and the ventilation of several schools is insufficient.

Mortality Statistics.

Continued Fever.—The numbers of deaths attributed to typhoid fever each year since 1868 are shown in the accompanying table. In the same table are given the numbers of deaths which have been attributed to meningitis, tubercular meningitis, cerebro-spinal fever, and certain other diseases. It will be seen from the table that typhoid fever has claimed one or more victims each year, with the exception of 1878, 1886, and 1887.

TABLE B.—Numbers of Yearly Deaths attributed to certain Specified Diseases in the Rural Sanitary District of Buckingham.

Diseases.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.
Typhoid, enteric, common continued, continued, low, or gastric fever, febris, typhoid pneumonia)	1	8	4	3	2	4	3	1	1	5	—	1	3	3	1	1	3	2	—	—	2
Tubercular meningitis	1	1	1	—	—	—	—	1	1	—	1	—	1	3	—	4	1	—	3	2	3
Meningitis	—	—	—	—	—	—	1	2	1	—	1	—	—	1	2	1	2	—	—	—	—
Cerebro-spinal fever	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—
Infantile fever or infantile remittent fever.	—	—	2	1	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—
Enteritis, muco-enteritis, or gastro-enteritis.	1	1	1	—	1	2	—	—	1	—	1	2	3	3	—	—	1	1	—	—	1
Diarrhoea	3	3	1	1	5	4	1	3	7	3	3	—	2	2	5	3	9	—	—	—	—
	6	13	9	5	8	10	5	7	11	8	6	5	9	12	8	10	15	3	3	2	6

In reference to other diseases which at times are confounded with typhoid fever, as, for instance, meningitis, simple or tubercular:—it appears that altogether 23 deaths have been certified as due to the latter form of this disease, and as many as eight of them occurred in one parish, Tingewick, and three others in another parish, Padbury. In 6 of these 11 cases the ages at death were over 5 years; in one case the age was 12 years, and in another 17. Similar details for the other deaths ascribed to tubercular meningitis have not been ascertained. Then, again, while the deaths at Tingewick from tubercular meningitis have numbered eight, those from typhoid fever have numbered only two; whereas in other parishes these relations have been reversed.

In two cases of "tubercular meningitis" the illness lasted 14 days; in two others, 21 days; in another case the cause of death was certified thus: "tubercular meningitis, 21 days; tubercular peritonitis, seven days."

Concerning enteritis, muco-enteritis, and gastro-enteritis, it is to be observed that of the total 19 deaths ascribed to these affections five occurred at Marsh Gibbon and four at Steeple Claydon; and that of the nine in these two places there were six at ages over 30 years, and two of the nine were preceded by illnesses each of 14 days' duration. In this connexion attention may be directed to Table C., which shows the parishes in which about a half of the deaths referred to in Table B. took place.

TABLE C.—Localities in which about one half of the Deaths entered in Table B. took place.

Parishes.	Popula- tion, Census 1881.	Typhoid, Enteric, Continued, Common Continued, &c. Fever.	Tubercular Meningitis.	Simple Meningitis.	Cerebro- Spinal Fever.	Infantile or Infantile Remittent Fever.	Diarrhoea.
Radclive and Chackmore	367	2	—	1	—	—	—
Water Stratford	188	2	1	—	—	—	—
Leckhampstead	349	5	—	1	—	—	—
Maids Moreton	448	6	1	—	—	—	2
Padbury	539	7	3	—	—	—	3
Thornborough	577	1	2	—	—	—	1
Marsh Gibbon	743	2	2	1	—	3	4
Tingewick	787	2	8	—	1	—	1
Steeple Claydon	852	6	—	—	—	1	4

Of the total of deaths from diarrhoea, viz., 27, there were 20 at ages under 5 years.

Diphtheria.—The deaths certified as due to diphtheria are given in Table D. From the same table it will be seen that deaths ascribed to croup and tracheitis have been almost twice as numerous as those from diphtheria: and as serving to indicate the real nature of some of this croup it may be noted that at Padbury in 1882 there were six deaths attributed to croup and four to diphtheria, in some instances deaths in close sequence in one and the same household having been ascribed to both affections; and that at Hildesden in 1870 there were in close sequence in one family two deaths attributed to malignant scarlatina and one death to diphtheria or diphtheritic croup.

TABLE D.—Numbers of Deaths yearly attributed to Diphtheria and certain other Diseases in the Rural Sanitary District of Buckingham.

Diseases.	1868.	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.
Diphtheria or diphtheritic croup .	1	1	1	1	—	1	—	1	1	—	—	4	—	2	5	—	—	1	1	—	—
Croup or tracheitis	1	3	2	7	2	2	1	—	—	—	—	—	1	2	8	1	—	1	1	1	—
Laryngitis (excluding chronic laryngitis).	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—
Ulceration of mouth, ulcerative stomatitis.	—	—	1	—	—	—	—	—	1	1	1	1	—	—	—	1	—	—	—	1	—
	2	4	4	9	2	3	1	1	2	1	1	5	1	4	13	2	—	2	2	3	—
Scarlatina	—	2	11	16	—	1	2	—	—	1	—	—	—	9	6	—	—	—	—	—	—

Respiratory Diseases.—The numbers of deaths registered to phthisis and to bronchitis, pneumonia, and pleurisy in successive years since 1877 have been as follow:—

Diseases.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.
Phthisis	11	12	13	10	11	11	11	13	6	11	13	11
Bronchitis, pneumonia, and pleurisy.	15	14	14	29	16	21	19	20	13	10	14	16
	26	26	27	39	27	32	30	33	19	21	27	27

The distribution of deaths from these diseases in the larger villages is shown in Table E.

TABLE E.—Showing distribution of Deaths from “Respiratory Diseases.”

Parishes.	Population in 1881.	Deaths and Death Rates from Phthisis, Bronchitis, Pneumonia, and Pleurisy between 1877 and 1888.		
		Total Deaths from		Average Yearly Death Rate per 1,000 of the Population from the above Diseases.
		Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	
Charndon	150	4	9	7·2
Lillingstone Lovell	161	6	5	5·6
Beachampton	217	2	6	3·0
Stowe	338	8	2	2·4
Twyford	339	2	6	1·9
Preston Bissett	344	9	8	4·1
Maids Moreton	448	13	7	3·7
Padbury	530	4	10	2·2
Thornborough	577	17	6	3·3
Marsh Gibbon	743	19	19	4·2
Tingewick	787	15	21	3·8
Steeple Claydon	852	10	30	3·9

The figures presented in the above series of tables of deaths show that typhoid fever is, as would be expected from the sanitary circumstances of the district, of frequent occurrence; they show, too, that diphtheria is by no means of infrequent occurrence, and that at times it is responsible for considerable mortality; also they show rates of mortality from respiratory diseases in excess of country places generally, and tending to raise questions as to the responsibility of damp and ill-ventilated houses for the mortality witnessed.

It is also to be observed that cases of infectious disease have generally occurred as groups. At Maids Moreton in 1877 there were 17 cases of enteric fever with three deaths, all at about the same time. Seven of these cases "apparently began on the same day." This outbreak began in that part of the village called Well More, the drainage of which is still defective, and the water supply for which is as unsatisfactory now as it was then. As already intimated some makeshift measures were being taken at the time of this inspection to improve the latter. In the same village in 1881 there were four cases of enteric fever attributed to entrance of faecal matter into the well, from which the drinking water of the sufferers was obtained. Again at Foxcott in 1877 there were six cases of fever and two deaths (at ages 20 and 28 years) in an isolated row of cottages then occupied by 36 inmates; and at the present time the water for these cottages is taken from a pump well in a cultivated garden. It would appear then that one cause of the grouping of cases of enteric fever in this district has been fouling of water supplies.

At Padbury two of the chief public wells were discovered to be fouled by drainage in two consecutive years, the one in 1882, and the other in 1883.

Moreover, the sequence of multiple cases in one and another restricted locality suggests inefficiency in the remedial measures adopted by the Authority, a matter to be reverted to below, for dealing with this readily limitable disease.

At Padbury, in 1880, a man fell ill of enteric fever, then his wife, then his mother, aged 53 years, took it and died, and her two sons also, who lived with her, took it; and 11 other persons in different parts of the village fell ill of it, and a woman aged 32 years died. In 1881, in the same parish, a woman died of this disease; and her son, aged 21 years, died shortly afterwards of it. In 1883 there were five cases of enteric fever there.

So also with other infectious diseases. In 1882 diphtheria and croup carried off 1.8 per cent. of the inhabitants of the parish of Padbury. In 1870 and 1871 scarlatina carried off 1.6 per cent. of the inhabitants of the parish of Tingewick.

It may also be noted here that sore throat was epidemic in Tingewick in 1884. And it deserves notice that in the period from December 1888 to January 1889 there was a sudden outbreak of illness characterized by diarrhoea and vomiting at Padbury. Of the total of 127 dwellings in this village, 15 were invaded, chiefly in that part of the village called Lower End; there were 91 inmates in these 15 dwellings, and 53 of them were affected. The duration of the illness varied from 3 to 14 days. Adults and grown-up men, and even elderly persons, were taken violently ill; and in half or more of the dwellings invaded they were the first to manifest symptoms. Several were confined to bed. The water supplies were being taken from various sources. Lapse of time forbade a thorough investigation as to the cause of this illness. The fact that it "ran through" the household, affecting all the inmates (eight in one instance, seven in another), indicates some common cause, or it indicates that the malady was infectious or contagious, a suggestion which receives some degree of confirmation in the fact that the affection occurred in a family and attendants who interested themselves in the poor of the village at the time.

The repetition and multiplicity of cases of sickness and of death from the above causes in particular localities is a strong indication that the Sanitary Authority has not properly exercised the functions for which it was constituted.

Sanitary Administration.—There has been but little well considered systematic action taken by the Authority. Several of the common village drains have been reconstructed, some improvement here and there has been effected in the water supply, and of late the wholesomeness of dwellings and their premises has received some attention. But what has been done is often unsatisfactory. "Sewers," relaid and extended, have in places been left connected with old rubble highway drains; some have been made to discharge their

contents under conditions that have necessarily given rise to nuisance; and precautions have not been taken to see that house drains connected with them have been properly constructed. Water supplies have been brought into parts of some of the villages; but the Authority have rested satisfied with measures wholly inadequate to the requirements of particular places, as, for instance, in the cases of Edgcott and Charndon. As concerns the latter, the Authority wrote to the Board, under date April 1889, to say that they considered that "everything had been done to provide a satisfactory and convenient supply of water" for the village. The general dilatoriness with which pressing wants are taken up is revealed in the present condition of the district.

As further illustration of the unsatisfactory condition of affairs in this district the following facts may be mentioned:—

Twenty years or so ago the drains from some houses at Chackmore—those already referred to above—were connected with the common village drain, under the supervision, I am told, of the then surveyor of the parish; several months back the present surveyor, himself a guardian and member of the Rural Sanitary Authority, had these drains disconnected from the common village drain; and they have been left to discharge ever since into the loose soil at the place where they were disconnected. The Authority are well aware of the facts—they are matter of notoriety—but they take no steps to put a stop to the continued fouling of the house air thus brought about, or to the danger which hangs over the inmates of these houses of drinking sewage-polluted water. The fouling of house-air must needs take place, for the houses have indoor sinks connected directly with these drains, and in some cases without intervention of a trap; and the danger of the water supply being polluted is imminent, for at any time the soil may decline to accept further charges of filth, and then the sewage matters backing up in the drains will, likely as not, escape into the well, close alongside of which one of the drains runs, and which supplies in common the inmates of all the five houses.

In the matter of remedying structural faults of dwellings the Sanitary Authority have hesitated to use the powers they possess.

The Authority have no byelaws. They cannot, therefore, supervise in detail the construction of new buildings. But full advantage is not taken of the provisions of the Public Health Act, which deal with house-nuisances; or of the provisions of the Public Health (Water) Act, 1878. Slaughter-houses are permitted to have broken floors and filthy premises, while blood from them is allowed free escape into the common drain of the village, no matter how primitive be the construction of the drain or the mode of permanent disposal of its contents. One only of the dairies is registered.

The Authority have no means of isolating persons, who, while suffering from dangerous infectious disease, are themselves without proper lodging or accommodation; and as a result communicable disease, even typhoid fever, rarely remains limited to the persons first affected in a household. The importance of attention to this matter has been urged on the Authority time after time by the past and present Medical Officers of Health. The Authority have not supplied themselves with means for proper disinfection of bedding and clothing. They have taken no steps to see that prompt information be obtained of the occurrence of zymotic disease; they do not obtain of the registrars immediate information when a death from zymotic disease is registered; they do not obtain or supply to their Medical Officer of Health regular weekly lists of pauper sickness in those districts for which the Medical Officer of Health is not District Medical Officer; nor do they invite notification of zymotic disease on the part of the medical practitioners.

They pay 40*l.* per year (half of this being repaid by the Board) to the Medical Officer of Health; his advice goes in large part unheeded, and his attendance at the meetings of the Authority he regards as not encouraged. The Inspector of Nuisances receives a like salary. Since his appointment on the 23rd of June 1888 he has made himself thoroughly conversant with the requirements of the district; but his work is carried on under great difficulties; he cannot, in some cases, even get the reconstruction of a privy carried out properly without opposition from various persons. He is not required to devote all his time to the duties of his office, his pay being insufficient for the purpose. But even the cases which he is able to bring to the notice of the Authority at their monthly meetings, and the

attention which is given to them by the Authority, are determined by a 30-minutes' limit (in all six hours in the course of the year), which the Authority have set to the duration of their deliberations over the sanitary questions affecting the district for which they are responsible, a period which has of late been sensibly curtailed in order to give attention to the subject of allotments.

D. ASTLEY GRESSWELL.

June 14, 1889.

RECOMMENDATIONS.

1. Every occupied dwelling in the district should be provided with an adequate supply of wholesome water within a reasonable distance.

Skilled engineering advice should be taken as to how far such provision shall be made in the form of local or general works, and as to how far advantage may be taken of the private water services already existent in the Rural Sanitary District, and of the waterworks now in process of construction for Buckingham town.

2. Need for proper removal and disposal of sewage matters throughout the district should receive careful consideration. All public conduits of the nature of sewers should be constructed throughout so as to prevent leakage from them, or deposition in them of sediment; and the sewage should be ultimately disposed of in such a way that no nuisance arises. And first in this connexion the villages of Tingewick, Preston Bissett, and Steeple Claydon should receive attention.

Every dwelling should be provided with means for the innocuous disposal of liquid refuse; drains in the immediate neighbourhood of the dwelling should consist of impervious pipes; their inlets should in every instance be out of doors and be properly trapped.

Care should be taken that drains, public and private, in addition to necessary trapping should have necessary provision for ventilation.

3. Every care should be exercised to maintain wholesome conditions of dwellings, internally and externally.

- a. Dwellings, which are a nuisance owing to damp, want of ventilation, and the like, should be put into proper repair, or, failing this, should be closed.
- β. The ground immediately about dwellings should be kept dry, and where necessary for the prevention of nuisance should be properly sloped, drained, and paved.
- γ. Every opportunity should be taken to further the repression of nuisances arising from ill-constructed and misplaced receptacles for refuse and excrement. Proper receptacles for these matters should be provided; and if fixed receptacles be retained, they should be constructed of moderate dimensions, should be watertight (their floors being kept above the level of the ground), and should exclude rain water.

4. Removal of refuse and excrement from house-premises should be carried out at frequent and regular intervals. In places where this cannot be efficiently done by the occupiers under section 44 of the Public Health Act, the Authority should, under section 42, themselves undertake the duty.

5. The Authority should take the necessary steps to secure the regulation of slaughter-houses and dairies.

6. The Authority would do well to seek urban powers in order, through byelaws based on the Model Series of the Board, to control the construction of new buildings in those parishes where building operations are likely to extend.

7. Arrangements should be made for securing to the Medical Officer of Health early information of the occurrence of infectious disease in the district.

In this connexion the Authority should consult the Board's memorandum of May 1881 on "Returns of Deaths from Registrars, and Returns of Pauper Sickness from District Medical Officers."

8. The Authority should provide themselves with a building or buildings whereto they may remove persons who, when suffering from dangerous infectious disorder, are without proper lodging or accommodation, or who, by reason of their illness, are a source of danger to others.

They should also provide means for thorough disinfection of infected clothing and bedding.

For information on these matters the Authority may usefully consult the Board's memorandum on the Construction and Use of hospitals for infectious diseases, and the Office Report on Disinfection by Heat.

In this connection the Authority should consult the Board's memorandum of May 1881 on "Means of Dealing with Legitimate and Returns of Taper Diseases from District Medical Officers."

8. The Authority should provide themselves with a building or buildings where they may remove persons who, when suffering from dangerous infectious diseases, are without proper lodging or accommodation, or who, by reason of their illness, are a source of danger to others.

They should also provide means for thorough disinfection of infected clothing and bedding.

For information on these matters the Authority may usefully consult the Board's memorandum on the Organization and Use of Hospitals for infectious diseases, and the Office Report on Disinfection by Heat.