

OUR SANITARY LAWS:

HOW THEY ARE ADMINISTERED.

A CONTRIBUTION TO THE DISCUSSION OF THE QUESTION OF
PUBLIC HEALTH.

BY

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"That self-cancelling Donothingism and *Laissez-faire* should have got so
ingrained into our Practice, is the source of all these miseries."—CARLYLE.

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OUR SANITARY LAWS.

Now that attention is being more closely turned on all sides to the vitally important question of preventive medicine, it has occurred to me that it might not be out of place in me to offer some account of my experience how our sanitary laws are administered. It may, perhaps, serve in some small measure to show what need there is of a better system of sanitary legislation.

In the beginning of October, 1879, a case of typhoid fever occurred in a patient of mine living in a farm-house in the parish. It was, and is, one of the principal dairy-farms in the district. Fever had repeatedly occurred at the farm, but there had been no case in recent years. Some of the cases, at different times, had ended fatally. There was therefore considerable anxiety in the public mind, when it became known, that there was a case of fever at the farm. I was repeatedly spoken to on the subject and urged to report the case. So long as the law does not require me to report, I have never been able to see it to be my duty to do so. And whatever may be the result of reporting in a city like Glasgow, with its special Act so admirably administered by Dr. Russell, most persons having any practical acquaintance with the subject will, I doubt not, agree with me that under the law as it stands, and with such an accumulation of authorities as there now is, to report would only be to lend one's self to a dilatory, delusive, and mischievous formality. My duty, in my view,

was to accept the responsibility that had fallen upon me, and to see that every precaution was taken for the protection of the other inmates of the dairy and the public safety. And on this view I acted from the moment (second day) that I suspected that the illness I was face to face with was to turn out typhoid fever. Fortunately, the construction of the dwelling admitted of such arrangements being made as that practically the patient lived in another house, so complete was the isolation I was able to make. And I made it my business at every visit to see that my orders were obeyed to the letter.

After a time, however, some one, I know not who, reported the case to the Local Authority at Ayr, which sent an inspector, though what the poor man's instructions were it would not be easy to guess. I believe he called for me. I chanced not to be at home at the moment. He returned to the Local Authority at Ayr without having either seen me or visited the farm. It would be interesting to see his report. However, seeing the Local Authority *had* moved in the matter, I, on 3rd November, reported to them the facts regarding the illness and the precautions taken, and specially called attention to the insanitary and dangerous condition of the farm steading.

After expressing my regret that I had not seen their inspector, &c., I went on to say, "— — was lying in a concealed bed (from the thinness of the wall at the foot of the bed, an unwholesome damp hole) in a little room opening off the kitchen, which again communicates with the scullery, the milkhouse, and the byre." . . . "There is no water-closet or privy accommodation within the premises, but there are two privies outside. One is badly kept. The other is placed over a covered drain which carries a small run of water past the west end of the steading. About twenty-five or thirty yards below the privy the drain comes to the surface, and pours its contents into an old iron boiler which serves as a drinking-trough for the cattle. But this is quite a modern improvement, and not, like the bad

arrangement of kitchen, milkhouse, and byre, a fault of the steading as originally constructed. It is not for the use of the establishment generally, and, I believe, has not been in use for more than a few months.

"The position and state of the dungheap and the condition of the byre, and the general arrangement of the latter, are in my judgment most unsatisfactory. The dungheap is immediately contiguous to the eastern wall of the byre and milkhouse, and contains many tons of manure and thickish black putrid liquid. I pass over without comment the lighting and the ventilation (if there be any), to call attention to the drainage of the byre, which, instead of being directed to the more distant or outer end, is carried down the centre to the inner end next the scullery, milkhouse, &c., and is thence led out, through a hole in the eastern wall of the byre, to spread as a filthy black mass along the byre and milkhouse wall. This arrangement, by which the drainage of the byre is brought towards the end next the scullery, milkhouse, and kitchen, is not a trivial matter. It is essentially vicious and dangerous. For example, on inquiring, when my suspicions became aroused as to the nature of the illness, what was being done with the excreta, I was informed that they were being 'thrown into the byrehead.' That is to say, the excreta were being carried through the kitchen and scullery and thrown into the end of the byre next the latter and the milkhouse—a practice, I fear, by no means uncommon. I believe I am correct in saying, that, in one of the recent outbreaks of typhoid fever in Glasgow, the disease was found to have spread from a dairy where this same practice was followed.

"All the water used in the various departments within the premises is obtained by gravitation from a well in a grass field near the house, and is in the meantime, at least, free from suspicion of impurity. But the well is a mere surface one, and a tile drain which is said to carry a spring into the well is also close to the surface. When with a view to cultivation the field comes to be manured and ploughed,

will the well be equally pure and safe then as now? I believe not. . . .

"I take it that, by sending an inspector to investigate this case, the Local Authority acknowledges an obligation lying upon it to exercise certain powers vested in it under the Dairies Order 1879. . . . At the outset I did not take the course I am now taking, because the public interest necessitated immediate and decided action. Delay meant danger, and I felt more secure and confident in what I did, or saw done under my own eyes, than I should have felt in other circumstances. The danger which might have arisen from the illness is now over, and safely over. But while the danger from the illness is over, the dangers from the dairy remain, and it is to these I now ask the attention of the Local Authority. In the public interest I voluntarily accepted the heavy and serious responsibility of dealing with the first danger as soon as it arose. But I can accept no further liability, and I now wash my hands of all responsibility for the second set of dangers, if these shall be allowed to continue."

To this I received from the Clerk to the Commissioners a reply, saying that he felt obliged by the letter, and would submit it to the Local Authority.

At the end of three weeks, nothing having been done in the interval, I, on the 24th November, reported the Local Authority to the Board of Supervision. Along with my letter to the Board, I sent a copy of my report to the Local Authority, and I also submitted some further information to the Board regarding the steading. While investigating the subject, it occurred to me that it would be desirable to see what could be established regarding the previous fever illnesses which were known to have occurred at the farm. I examined the old session and other registers, and from these and oral testimony had no difficulty in establishing the fact that some of the previous cases of fever had been typhoid. One remarkable statement made to me, and very significant with our present knowledge, was, that on one occasion, when

several members of the family were ill of fever—one of the cases marked by alarming hæmorrhage from the bowels—"a great many people, respectable people they were, were also ill of fever in the town, and some died." This and all the information I could gather bearing on the case, I submitted to the Board in letters subsequent to the letter of 24th November. I was desirous, if the subject was to be taken up, that the authorities should have as full information as possible upon all points.

Touching the conduct of the Local Authority at Ayr, besides complaining of their negligence in regard to the farm house, I took up also the question of the administration of the Dairies Order in the parish. "I cannot conclude without asking whether the state of matters which I found at — would have been possible if the provisions of the Dairies Order had been properly carried out? As I read that order, the dairyman is not simply to be registered; he is himself to register. And the Local Authority, before admitting him upon the register, is to be satisfied in regard to certain things—lighting, ventilation, cleansing, drainage, water supply, &c. What is the case here? I question if you will find a single dairyman who has registered, or who knows whether he has been registered or not. The order is wholly inoperative. I do not say there is no register, for I have been informed that there is a list of some sort kept at Dalry, twelve miles distant. But, if enquiry were made, it would be found that the dairymen neither applied to be registered, nor supplied the Local Authority with the information contained in the register; and that there was no investigation, no attempt whatever made to see whether the requirements of the Dairies Order as to water supply, drainage, or aught else were duly complied with or not. If it was not the duty of the Local Authority to see and be satisfied regarding — before admitting — upon the register, then what seems on the face of it to be wise and beneficent legislation becomes the meanest sham. But, if it was their duty so to see and be satisfied, then it is simply scandalous

and a disgrace that those entrusted with the care of the public health should thus trifle with the most sacred responsibilities."

On the 22nd December the Secretary of the Board wrote—"I have to inform you that the Board sent a copy of your letter of the 24th ultimo to the Local Authority of Largs for their observations, and also to H.M. Privy Council Office. I am informed by the Clerk to the Privy Council that the attention of the Local Authority of Ayrshire was called to the circumstances enumerated in your letter, and to the requirements of the Dairies, Cowsheds, and Milk Shops Order of July, 1879. The observations of the Local Authority of Largs have now been received, and the Board have remitted the whole subject to Dr. Littlejohn, their medical officer, to enquire and report." On the 2nd January, 1880, Dr. Littlejohn visited the farm.

At length, the middle of June having arrived without anything having been done, I wrote the Board, asking them to have the goodness to inform me whether the matter had been disposed of, and if so, how. I got no reply. On the 3rd August I again wrote, repeating my question. On the 5th the Board replied that "the subject was still under the consideration of Dr. Littlejohn."

At this point the Dairies Order and the Local Authority at Ayr again came into view. Typhoid fever began to appear in the town, and was spreading. Being desirous of consulting the register of dairies and milk-shops, I wrote to the Secretary to the Local Authority at Ayr, asking to be informed where and how I could see or get a copy of it. He replied that Superintendent M'Cracken, Dalry, had received instructions to let me see the register whenever convenient for myself. I wrote to the Superintendent, asking him to send me a copy, and note of his charges for making it, that I might pay him. Failing to receive any reply, I, on the 27th September, again wrote the Board, repeating my question about the farm-house, and enclosing a copy of the correspondence about the register. "I question," I said, "the

conduct of those who ordered a register for Largs to be kept at Dalry, and made such regulations as prevent a copy of it from being obtained for use here. . . . A register, to be of use, ought to be kept on the spot. Is it reasonable that one should have to go to a place distant twelve miles to see who are registered to keep cows here and sell milk? And for what end do I wish to know these things? Is it not the very same end for which the Local Authority was constituted, and the register ordered to be made? What am I asking but that the Local Authority should give me the facilities which the law provides for reaching, if possible, a better position for protecting and promoting the public health?"

"At this moment typhoid fever is prevalent in Largs to a greater extent than it has ever been since I began practice here in 1858. Three persons have died of it within a week—one of them the wife of a small dairyman or cowkeeper; and I have good authority for stating that, up to within a day or two of her death, the woman who nursed her attended to the cows as well. Again, I found that one of my fever patients was being supplied with milk from another small dairy, the owner of which was ill of typhoid fever, and there too, it is only too probable, the dairywoman was also at times the nurse. In such facts as I have here stated I hope you will see some good foundation for my contention that the register ought to be available here, where and when it is required."

Again I got no reply from the Board. But, on the 9th October, about three weeks after my application to the Clerk of the Local Authority at Ayr, I received from Superintendent M'Cracken a copy of the register, with a letter expressing his regret that he could not get it sent sooner. It contained thirty-six names. On looking over it I found that it did not contain the name of a person who kept either one or two cows, and supplied with milk a family in which I had three cases of typhoid fever. So much for the accuracy of a register made up as I have already indicated.

But of what use, beyond tracing the mischief after it had been done, would a perfectly accurate list of names be, so long as the register is no guarantee that the dairy is conform to the sanitary provisions and requirements of the law?

On the 28th October I again wrote the Board, reminding them that it was now nearly a year since I had called attention to this farm, re-stating the insanitary conditions existing there, and complaining of the negligence and delay which had occurred. I added, "Such, sir, is the result of a year's correspondence with your Board on a matter alike dangerous to health and contrary to decency. I make bold to say that so long as such notoriously insanitary conditions as are to be found at —— are either connived at or sanctioned, as appears to be the case in this instance, it need not be thought strange that the Public Health Act should prove a failure in Scotland. I am satisfied that such a state of matters as I have so long and so vainly complained of, has only to be publicly made known to be publicly condemned, and my next appeal shall be to the public."

It was curious to see the effect upon the Board of this intimation of an intention to take the public into partnership in the business. Immediately, on 1st November, came one letter, and on the 5th another, with a copy of Dr. Littlejohn's report, bearing date 2nd November.

The report is as follows:—"At the instance of the Board I visited the farmhouse of —— in January, 1880, for the purpose of enquiring into communications received from Dr. Kirkwood as to the occurrence of typhoid fever at that farm. I had an interview with Dr. Kirkwood, and thereafter, accompanied by the Medical Officer of Health and the Sanitary Inspector, I visited the farm in question, where I found the proprietor and his factor waiting to receive me. The tenant of the farm was in attendance. He was the patient, and he had made a satisfactory recovery. Dr. Kirkwood was the medical attendant, and under his directions the room where the patient had first lain down had

been vacated for another in which suitable isolation was secured. The disease, thanks to Dr. Kirkwood's precautions, did not spread at the farm, and no case occurred in the town of Largs which could be traced to the farm. The question now resolved itself into one of accommodation at the farm for dairy purposes, and also as to the general sanitary state of the place.

"There was marked general cleanliness, but the manure heap was badly placed so far as the dairy was concerned, and the arrangement of the byres in connection with the house was not entirely satisfactory. I could not say that the case was a clamant one, and the impression made on my mind was that Dr. Kirkwood was too exacting.

"The proprietor and his factor listened to my suggestions and promised to give effect to them, only craving delay in carrying them out seriatim, as opportunity presented itself. After my inspection I waited on Dr. Kirkwood and explained to him what was proposed to be done, and the Medical Officer of Health promised to communicate to me at once any cases of illness occurring in Largs or its neighbourhood which could be attributed to this solitary case at ——.

"In the meantime the Medical Officer of Health died, and I wrote to the Sanitary Inspector for information as to what had been done at the farm. I enclose his communication of date 13th August, 1880.

"My intention was, *seeing that the harvest was now fully gathered*, [underlined in copy of report sent me.—R.K.] to proceed to Largs, inspect the farm in the presence of the factor, and obtain from him on the spot a statement as to carrying out my entire suggestions, as ordinary farm-work is now at a standstill.

"As desired, I return the whole papers in the case.

"(Signed) HENRY D. LITTLEJOHN, M.D."

What rare patience in a Board to wait ten months for a report upon a nuisance! And it is as rare I think for a Medical Officer of Health appointed to report upon a nuis-

ance to charge himself with seeing that his suggestions are carried out. Was not the harvest as fully gathered on 2nd January when Dr. Littlejohn made his first visit, as on 2nd November when he made his report, or on 16th December when he made his second inspection and again reported?

On the 12th November, after acknowledging receipt of this report, I replied, "I desire now to offer some observations on that report. Dr. Littlejohn says, 'The impression made on my mind was that Dr. Kirkwood was too exacting.'"

"I am a native of Largs, and able to remember some of the outbreaks of typhoid fever referred to in this correspondence. And with the knowledge of such a fever history as — has, I thought it my duty to investigate its sanitary condition thoroughly. And having done so, I discovered certain structural arrangements which, if there be any truth in the teachings of sanitary science, or we are to be guided by observation and experience, are notoriously insanitary and dangerous. These I brought under the notice of the authorities entrusted with the care of the Public Health. And now, after having brooded over the matter for ten calendar months, your medical officer says he cannot say the case is a clamant one, and not to disappoint me altogether with a merely negative decision, finds me 'too exacting.' What a '*mus ridiculus*,' for such a protracted gestation! But it will take something thicker than milk and water to whitewash —. Will Dr. Littlejohn venture to say wherein I am too exacting? Is it in calling attention to the privy accommodation, and specially to the cattle watering-trough into which I found one of the privies discharging itself? or to the well, with its superficial and loosely-joined tile drain, which must inevitably be polluted when the field in which it is situated is manured and ploughed? or to the undrained steading, built in the form of three sides of a square, and standing in a hollow partly dug out in the side of the hill, with the unbuilt or open side facing the slope of the hill? or to the milkhouse in the

corner of the washing-house or scullery (for the place serves all purposes), with its open and free communication with the byre, with the servants' sleeping-place above it (*i.e.*, over the milkhouse and scullery), and also with the kitchen which serves besides as a bed-room? It amazes me to find your medical officer speak of this faulty and dangerous arrangement as being merely 'not clamant,' and 'not entirely satisfactory.'

"Does he know anything of the recent widespread and fatal epidemic of typhoid fever in Glasgow? It was to a steading having almost identically the same general structural arrangements that the able and accomplished Medical Officer of Health of Glasgow, Dr. Russell, traced the outbreak of typhoid fever which occurred in that city in April last. See his interesting and valuable report. . . .

"It is, I think, unfortunate that the Local Authority here was not entrusted (especially as their Medical Officer of Health and also their Sanitary Inspector accompanied him to —) with Dr. Littlejohn's suggestions, as well as 'the proprietor and his factor.' For I find that after waiting for eight months for these suggestions, and waiting in vain, the Local Authority on the 6th September desired their Inspector to write your Board asking for instructions regarding —, and that on the 9th September you replied enquiring what instructions were desired. Evidently the Board knew just as much or as little about it as the Local Authority did. . . .

"And this brings me to the other branch of my complaint, namely, that through neglect or failure on the part of the Local Authority, under the Contagious Diseases (Animals) Act, the provisions of the Dairies Order have not been complied with in this parish. Hitherto you have persistently ignored all I have written upon this subject. And I have been greatly at a loss to understand, why, as seems to have been the case all through this correspondence, the authorities should have thought it incumbent upon them to assume a position of antagonism to what are, on my part, honest and

well-meant endeavours for the public health and safety. . . One way or another I have got to follow this subject up to some useful practical issue. In your circular letter of 29th February, already referred to, you point to 'the important effect which this order, *if duly executed*, will have on the public health, and you call upon Local Authorities to direct their special attention from time to time to those premises within their district to which the order applies, and to report all contraventions of the order to the Local Authority under the Contagious Diseases (Animals) Act of the County or Burgh, as the case may be (who are responsible for the execution of the order) as well as to themselves.' Responsible to whom, if not to your Board? If I am wrong in addressing myself to you on this subject, I respectfully beg you will have the goodness to put me right, and inform me where or to whom I must apply. In my view, the subject of dairies is one of great and growing importance, and, in reference especially to inspection and registration, one which both deserves and demands immediate attention."

On the 17th November the Secretary of the Board replied as follows to my letter:—

"I have to acknowledge receipt of your letter of 12th instant, which will be laid before the Board. In the meantime I am to point out to you that copies of your letters were sent to the Privy Council Office, with a request that the Privy Council would take such action as they might deem necessary, the Board having no jurisdiction under the Contagious Diseases (Animals) Act.

"Of this action on the part of the Board you were duly informed in my letter of 22nd December, 1879, and it was added, 'I am informed by the Clerk to the Privy Council that the attention of the Local Authority of Ayrshire was called to the circumstances enumerated in your letter and to the requirements of "The Dairies, Cowsheds, and Milkhouse Order of 1879."'"

The reply is not wanting in a certain adroitness, not usual, I think, if the learned and accomplished Secretary will allow

me to say so, in official correspondence. For the letter of 22nd December, 1879, see p. 8.

On 16th December Dr. Littlejohn paid his second visit to the farm. He did not call upon me on this occasion.

All things continuing as they were, on the 17th March, 1881, I again wrote the Board:—"Perhaps you will kindly permit me now, on the elapse of another four months, to remind you that your letter of 17th November last was only a reply '*in the meantime*,' and to ask you to favour me with a copy of Dr. Littlejohn's report, if he has reported, as I presume he must, after his second visit to —; and also to inform me as to the state of matters at the steading now, I mean as regards its sanitary condition. I should not like to be thought captious, but I must take exception to your statement that 'of this action on the part of the Board you were duly informed,' if by it it is intended to convey the impression that the statement made in the sentence going before had been previously made to me. I was not told of 'a request that the Privy Council would take such action as they might deem necessary,' nor 'that the Board had no jurisdiction under the Contagious Diseases (Animals) Act.' But it was stated 'that the observations of the Local Authority of Largs have now been received, and *the Board have remitted the whole subject* [*italics mine, R.K.*] to Dr. Littlejohn, their medical officer, to enquire and report.' . . . At all hazards, I must continue to press upon the attention of your Board the dangers attaching to a steading so faultily constructed as —, dangers which, as cannot fail to be known to your Board, a growing experience throughout the country but too frequently and painfully confirms. Equally pressing is the question of water supply." . . .

On the 23rd March the Board sent me a copy of Dr. Littlejohn's report. It is as follows:—

"*Final Report on the Sanitary State of — farm, Largs.*

"In obedience to the instructions of the Board I proceeded on Thursday, 16th December, and carefully inspected the

farm, along with the Sanitary Inspector and the Chairman of the Local Authority for the landward district of Largs.

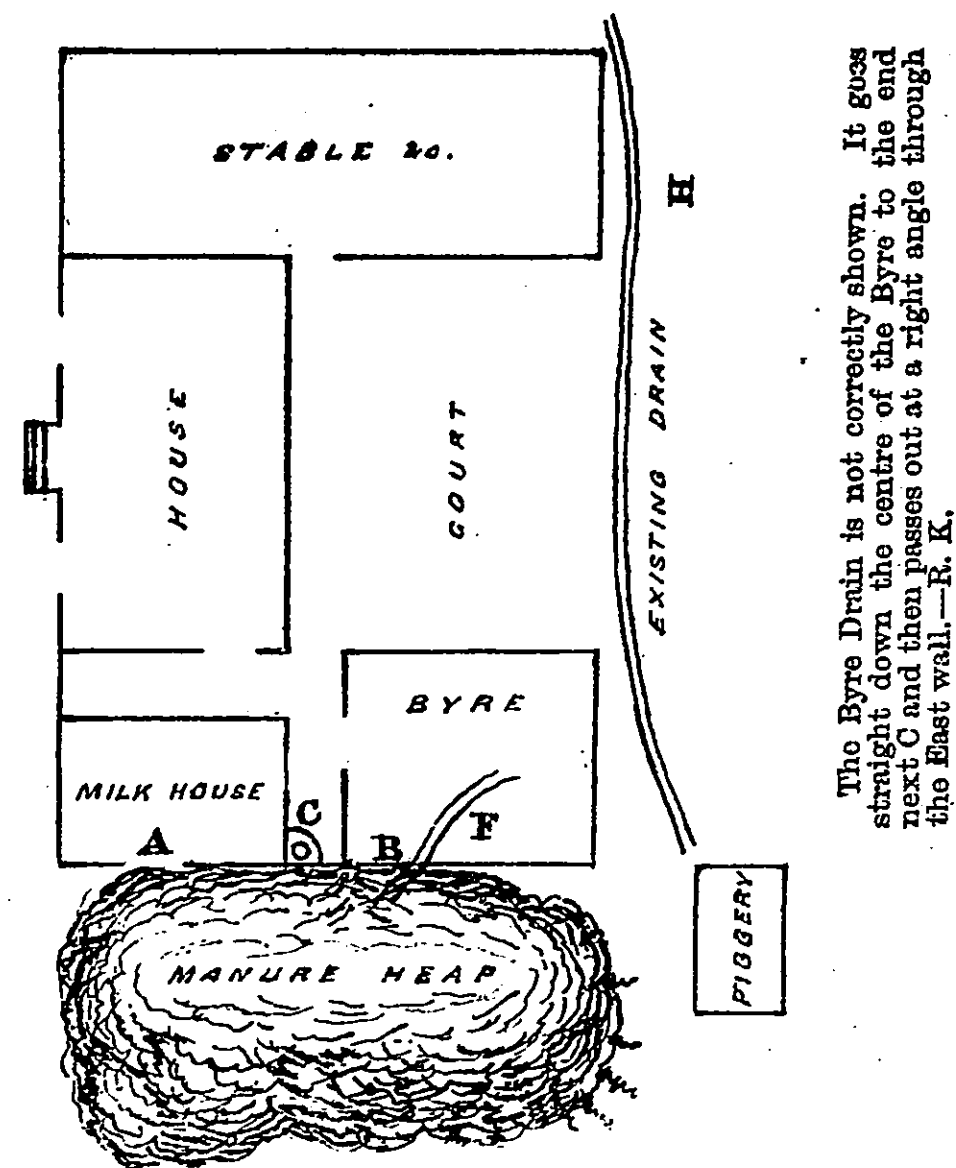
"I found that only one of my suggestions for the improvement of the sanitary state of this dairy farm had been carried out.

"It will be remembered that the occasion of this inquiry was the occurrence of a case of typhoid fever in the person of the tenant of the farm, whose case had been skilfully treated by Dr. Kirkwood, who had insisted on suitable isolation of the patient, and at the same time had drawn the attention of the Local Authority to serious defects in the construction and surroundings of the farm, which, in the event of infectious disease breaking out might lead to its dissemination in Largs and neighbourhood. Considering the importance of the question of milk contamination and also the popularity of Largs as a summer health-resort, I am of opinion that Dr. Kirkwood acted with commendable alacrity and intelligence.

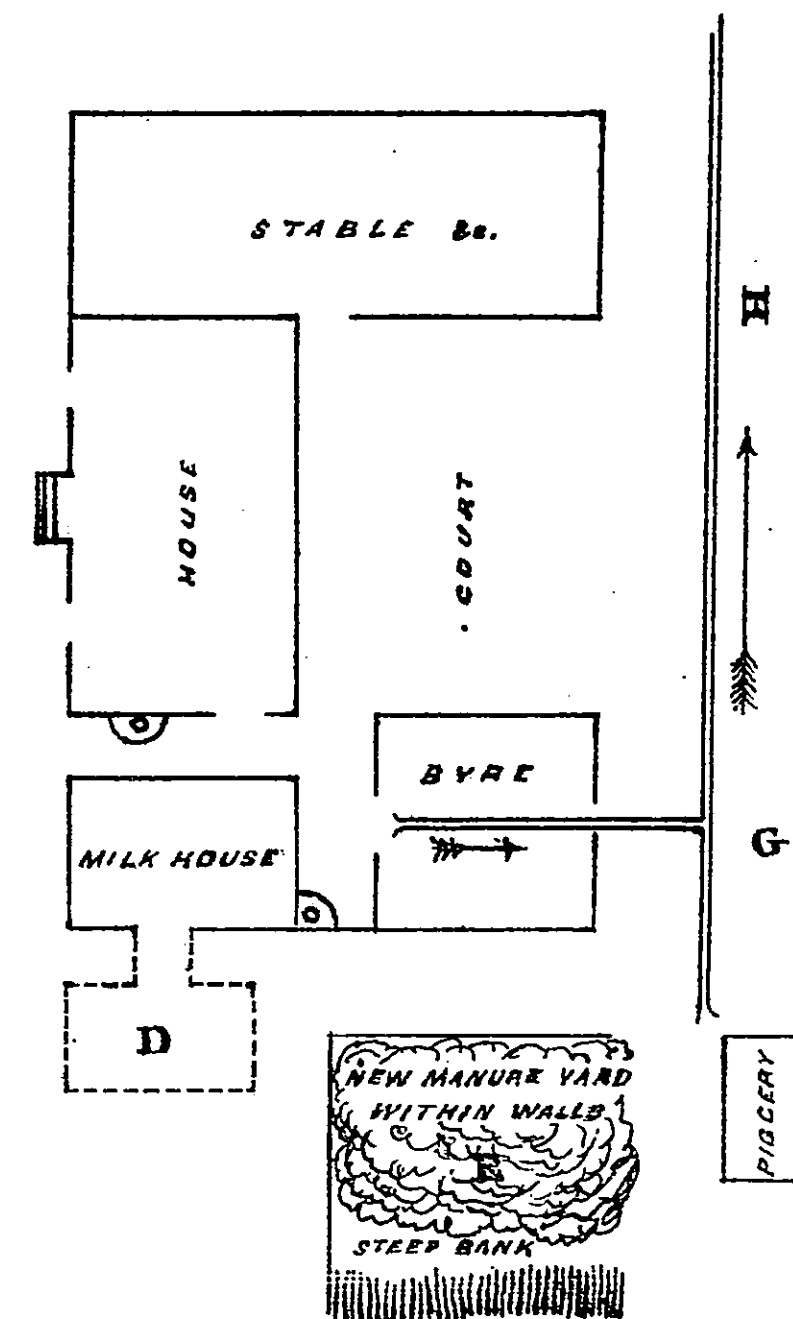
"The most clamant defect in the construction of this dairy farm was undoubtedly the position of the milkhous. On all sides the ventilation was defective and the milk was liable to contamination. The *outer wall A* (~~see Appendix~~) *with window* abutted on the large midden of the establishment, and into this mass of manure the drainage of the byre was led immediately under the dairy window. *Internally* the milk room B ventilated directly into the apartment C in which the boiler was placed, and where the clothes of the inmates of the farm were washed, and this apartment in its turn communicated freely with the rest of the 'living' portion of the farm.

"The arrangement is a most objectionable one in the case of a dairy farm. It is evidently the favourite construction of farm houses in the district, as I found it in the two adjoining dairy farms. The remedy is to secure isolation of the milk room. This, in the present case, where there is a want of accommodation generally, can be most easily secured by building out a new milk room as shown on plan

1
AS IT WAS, AND IS.



2
AS IT SHOULD BE



2 D. This addition, it will be noticed, communicates by means of a lighted passage with the old milk room, thus securing isolation and suitable ventilation.

"2. The manure heap has, as was proposed, been removed as shown on plan 2 E, and secured by a retaining wall. This is an undoubted improvement, and is the only suggestion which has been attended to.

"3. The drainage of the byre [F No. 1] which at present runs southward to the door and finally escapes under the milkroom window as shown in the plan, should be reversed and should be made to pass outwards into a drain at G No. 2. By this simple alteration an undoubted nuisance would be remedied.

"4. The whole courtyard should be repaired and the levels so arranged that the watershed should not be towards the farm but outwards, so as to allow of the rainfall, &c., &c., escaping by the drain H figured in the plan. This improvement would not only secure that the farm be kept dry, but also that the drain in question would be periodically flushed.

"All these suggestions were made to the proprietor and his factor, and were approved of by them as moderate and reasonable. Sufficient time has now elapsed to enable them to carry them out, and I would suggest that they be called upon by the Local Authority to do so with as little delay as possible.

"The water supply of the farm is derived from a well situated in a field which rises behind the house. I observed that the field in question is ploughed and about to be heavily manured. There can be no doubt that these operations must act injuriously on the character of the water supply.

"Luckily the water as employed for cleaning the milk vessels and utensils is used at or near the boiling temperature, which will tend to precipitate a portion of the organic matter and thus obviate in great part the risk attending on the use of such water.

"I have only further to add that both this and the other farms which I visited (so far as their internal dairy arrangements were concerned) were scrupulously clean.

(Signed) HENRY D. LITTLEJOHN, M.D.

"Edinburgh, 23rd December, 1880."

In acknowledging receipt of this report I expressed my satisfaction that their medical officer had now taken a more just view of the state of matters at —, and added, "One thing I regret in Dr. Littlejohn's report, and it is this, that though he says it is certain to be affected injuriously, the water supply is to be left as it is, exposed to injurious contamination, without any attempt at remedy!"

In August, 1881, diarrhoea and typhoid fever began to appear in my practice. This led to some inquiries on my part, and on 10th August I again wrote to the Board. "On making inquiry to-day about — I was met by a statement so very incredible that I must ask you to inform me whether the suggestions contained in your medical officer's report dated 23rd December, 1880, and which were to be carried out '*with the least possible delay*,' have been carried out yet or not; and, if not, whether your Board thinks it unnecessary now to proceed further in this matter." I also referred to the reappearance of typhoid fever.

It came out in the course of my inquiries that the landward Local Authority had thought it right to submit a sample of the well water for chemical analysis, and had received an unsatisfactory report. See Appendix.

On the 16th August I received a reply from the Board stating that they "had sent a copy of my letter to the Local Authority," and that "the question of the water supply was still being considered by the Local Authority."

After waiting till the 6th September I again wrote the Board, "I have to acknowledge receipt of your letter of 16th August, informing me in reply to inquiries I had made about — that the question of the water supply of the farm is still being considered by the Local Authority." So

far as I have been able to learn, it is being considered still. Nothing has been done by way of remedy, and so it comes about that one of the largest dairy farms in this district still continues to use water which, more than a month ago, was proved by chemical analysis to be truly *a dilute solution of dung*. On the 3rd August Dr. Wallace certified "that the products of the decomposition and oxidation of animal excreta were finding their way into the well, and that the water could not be used with safety." How long is this shameful and culpable trifling to go on?

"When in October last I hinted at the possibility of my bringing the whole matter under popular review, the case then stood solely on my statement of it. Since that time, however, your medical officer has made two reports, the last strongly condemnatory of —, and we have had also the report of Dr. Wallace as to the disgusting and dangerous quality of the water. I venture to affirm that these documents confirm in every particular all that I have advanced as to the insanitary and dangerous condition of —, everything that I have been so vainly trying for nearly two years to force upon your notice with a view to remedy. I have taken now, from first to last, a good deal of pains with the case, and I should feel ashamed with myself if I were to suffer so much labour to be lost. To my thinking, the most culpable and damning circumstance in the whole affair is the conduct of the Board in not causing the suggestions so urgently insisted upon by your medical officer to be carried out long ere now; and you may take it that I shall not let the material now in my hands much longer lie unused."

So I wrote ten months ago. But "*dis aliter visu*." My health, which had been suffering from long continuous hard and anxious work, gave way, and I have had to endure a long rest. Feeling, with returning strength, something of the irksomeness of inaction, I bethought me of this unfinished business, and wrote to the Sanitary Inspector of the landward Local Authority to know how it now stood. In

his reply he informs me that to a meeting of his Committee held 6th June last, he reported that he had "visited — and found the drain from byre and dungpit running as formerly . . . and not as Dr. Littlejohn recommended; also the milkhouse the same as Dr. Littlejohn saw it situated in the midst of the nuisance, &c."

It may not be amiss now, in brief resumé, to see what has been done and where we are in this business.

In October, 1879, a complaint is made to the Local Authority at Ayr—the Commissioners of Supply for the county. It sends an inspector. The inspector reports without examining the nuisance. His report is supplemented by a report giving details of the nuisance. The Local Authority does nothing. It is reported to the Board in Edinburgh. The Board reports the Local Authority to Her Majesty's Privy Council. The Privy Council reminds the Local Authority of the circumstances and of the requirements of the Dairies Order. The ultimate Authority in the country has been reached and moved. But the end is not yet. The Local Authority is quite equal to the occasion. While its clerk is reading to it the reminder of Her Majesty's Privy Council in London the Local Authority sits at Ayr, as impassive and motionless as did the Sphinx at Cairo to the bellowings of Admiral Seymour's guns at Alexandria. It does nothing. Then the Board at Edinburgh is moved to put its medical officer in motion. The medical officer visits and makes suggestions to the proprietor and his factor. The proprietor and his factor listen, approve, and promise. Thereafter the medical officer reports to the Board. But the thing will neither end nor mend. Again the Board instructs its medical officer. He visits anew, and after a vain search for the fruit of the promises of the proprietor and his factor he again reports. But grown wiser now, he this time makes his suggestions to the Board. These are to be carried out with the least possible delay. And now, a year and a-half after, the sanitary inspector reports to the Local Authority here that he has visited — and finds things

there very much as they were, the most clamant defect, and the most objectionable arrangement, according to Dr. Littlejohn's report, being still unremedied.

Such is the result of the united efforts of all the Authorities in the kingdom to remedy a proven and flagrant nuisance in a farm-house in a small country parish. Will any one maintain, that to have achieved such a noteworthy result, indicates on the part of the Board a high sense of the importance of the trust committed to it? or, that such *pultering* as is here shown is not destructive of all confidence in the Board as an administrator of the public health? With such an administration is it strange that the Public Health Act should have proved a failure in Scotland?

It may not perhaps be out of place, if, before proceeding to offer such remarks as are either suggested by this case or by my general professional experience, I point out now what abundant provision the law has made for the oversight and care of the Public Health. Of Local Authorities we have *three*, and *two* superior or General Authorities—First, there are the Commissioners of Police who are the Local Authority within the burgh. Second, there is the Parochial Board, which is the Local Authority for the landward part of the parish. Third, there are the Commissioners of Supply at Ayr, who, as regards "Dairies, Cowsheds, and Milk-shops" are the Local Authority in both burgh and parish. This Local Authority is under the jurisdiction of H. M.'s Privy Council. The other Local Authorities are under the jurisdiction of the Board (of Supervision). With so many cooks, need one wonder to hear now and again of whole cities having been poisoned!

Local Authorities cannot be got to deal with nuisances. Their constitution or composition, to give only one example, is against their doing so.

"The jury passing on the prisoner's life,
May in the sworn twelve have a thief or two
Guiltier than him they try."

They are ever slow to see what is either dangerous to health or contrary to decency, and what they will not see that they cannot be made to see. In an instance with which I am acquainted, a medical officer of health, after having made four reports upon a nuisance which had also been certified to be one by Dr. Littlejohn, was requested to make a fifth report upon the same nuisance.

How poor was the estimate formerly made of the importance of the question of the public health may be seen from the provisions of the Public Health Act, passed in 1867. That Act committed the care of the public health to a Board already existing and in action—the Board of Supervision for the Relief of the Poor. To a Board, it is to be presumed, of capacity only equal to the work it was appointed to do—the care of a small section of the community—Parliament assigned, as a fitting appendage to its pauperism, the care of the public health of the whole country.

A further indication of the totally inadequate idea then entertained of the high importance of this subject is to be found in the provision made when the country “appears to be threatened, or is affected by any formidable epidemic, endemic, or contagious disease.” In such an event it is enacted that “it shall be lawful for Her Majesty to appoint” *another sheriff*. There were already on the Board three sheriffs and the Solicitor-General.

Why should not the medical profession be thought eligible for a seat at our national Board of Health? Has it ceased to be true that—

“A wise physician, skilled our wounds to heal,
Is more than armies in the country’s weal”?

Rather, is it not a great and indefensible anomaly that a Board, appointed for the oversight and care of the public health, should have been constituted without a single representative of the medical profession among its members?

But there is a further objection. The Board was organised originally for benevolent purposes, and with the exception of

one member, whose services are paid, the services of the other members are gratuitous, save only that the sheriffs each receive an honorarium. Is it reasonable to expect that the Solicitor-General or the sheriffs, or any member of the Board other than the paid member, will devote, or will be able to devote, more than a fraction of his time, if even so much as that, to a matter which may be said to be foreign to his proper functions and duties? What sort of work a Board so constituted will do, and does do, I have already shown.

But opinion has advanced since the Public Health Act was passed. The proper and efficient administration of the public health requires a constant, watchful, and undivided attention, such as cannot possibly be given by an eleemosynary Board. If the business of the country (and what business is more important than the public health?) is to be well conducted, it must be conducted on business principles. And I am much mistaken if the country will not be found willing to pay for what it needs—a really capable and business-like administration of the public health.

How may this be obtained? What hope can any one see of getting it from our present system? For my part I am of opinion that the existing system has already done its work, by showing that the law is defective, complicated, cumbrous, and unworkable, and the administration ill-adapted for the work, feeble and inefficient; and that its day is over.

Leave the Board of Supervision to discharge its fundamental function, the relief of the poor, and commit the administration of the public health to a Board of Health specially formed and appointed for that purpose. Evidently what is needed is that there shall be some one power, owing only one duty to the country, strong, that can be instantly invoked, and that shall be swift and sure in action.

And among the changes needed in the law there is none more urgent than that power, wherever placed, shall be given to deal summarily with proven nuisances. Why, for

example, with Dr. Wallace's report before them, should it have been thought necessary to remit, and enquire, and consider what was to be done? If the Local Authority did not know, the Board knew well enough that there was only one thing to be done, and that was instantly to stop the use of the water. With such a high proportion of albuminoid ammonia as it contained it was totally unfit for use.

What matters it that men are being poisoned, or that they sicken and die! Boards and Authorities go on, in utter indifference, and with the most calm and formal deliberateness, slowly winding and unwinding the endless coil of routine in which officialism is swathed like a mummy in its cerements.

And to make assurance sure, power ought to be given, in dealing with such cases, not merely to stop the use of the water, but power also to stop the sale of the milk till it has been proved that a supply of pure water has been provided.

In like manner as soon as the existence of such a disease as typhoid fever, scarlet fever, small-pox, or diphtheria, &c., has been certified at a dairy or milkshop, power ought to be given to stop the sale of the milk until proof has been given either that the sick person has been removed, or that proper and sufficient precautions have been taken to preserve the milk from contamination.

Who shall report to the authorities when a case of infectious disease occurs, has been a good deal discussed of late. And although the general question may be said to lie outside the more limited subject with which I am here occupied—dairies, cowsheds, and milkshops, in relation to the public health—I may perhaps be permitted to express an opinion upon it. One will have it that it ought to be the householder, another that it ought to be the medical attendant. But why one rather than the other? I maintain that as a matter of principle it is the householder who ought to be required to give notice. And for this reason, that it is everywhere the rule that the person who does the wrong,

the author of the nuisance, is the person who must either provide the remedy or suffer the consequences. But as a question of public policy or expediency, it would seem to be desirable that the medical attendant should be the person to give notice, and I can see no reasonable objection to this, provided due provision be made for his doing so. And if this shall be the view which shall be found to prevail with the legislature, I hope care will be taken that the injustice done to the medical profession in Scotland when the Registration Act was passed shall not be repeated.

But while far from disparaging notification as we now have it in some of our large towns, its greatest use lies in showing how much need there is that it should be made universal, and speedily so. Epidemics due to milk-poisoning are occurring with increasing frequency. Till notification is made universal, the instruction to be derived from it, to a large extent, unfortunately comes too late. It is only *after* the citizens have been poisoned that the authorities come to know of it. But, while as regards the householder I should be willing that the medical attendant should be the person to give notice, as regards the dairyman or milkseller I should throw the burden of giving notice upon him. And for this reason. The moment a case of infectious disease occurs in his establishment, the dairyman ceases to be an ordinary householder, and becomes a person carrying on a trade or business dangerous to health. And the law ought to recognise the fact and provide accordingly by requiring him to give immediate notice, under a penalty. In no other way will you succeed in overcoming the indifference in the bucolic mind to sickness. Make it clear to the farmer that if he waits till mischief has been done he shall, on its being traced to him, have to suffer the consequences, and we shall have fewer cases of neglected illness, and fewer epidemics as well.

The only objection, so far as I know, made to giving notice to the authorities is that the dairyman's business may be injured, and something like this was the position taken

up by the dairyman to whose establishment Dr. Russell traced the milk-supply which caused the outbreak of typhoid fever in Glasgow in April, 1880. It is simply a question of opposing interests—the milkman's business or the public health. If the question *which* is the greater interest can be decided, there ought to be no misplaced sympathy. Dairies exist for the public, not the public for dairies.

If any person shall think that to compel him to give notice under a penalty would be to press with undue severity upon the farmer, I ask him to study the provisions of the Contagious Diseases (Animals) Act. He will there find that Parliament has already, in the case of animals, applied the same rule which I am now seeking to have applied in the interest of human beings. The provisions of that Act, as regards animals, are very comprehensive and very stringent. Care is taken as regards the diseased animal, its house or shelter, its excreta, &c., to provide for every possible event and contingency. The initial step who shall give notice is not neglected. It is enacted that "Every person having in his possession or under his charge an animal affected with disease shall, as far as practicable, keep that animal separate from animals not so affected, and shall, *with all practicable speed*, give notice of the fact," &c. And to facilitate the working of the Act, the police are impressed into the service. Notice is to be given to the nearest constable of police, and "the constable of police to whom notice is given shall *forthwith* give information thereof" to the appointed authority. And to make sure that this shall be done, the person having the animal in his possession or under charge is required to give the notice, under a penalty not exceeding £20 in case of failure. Judged by their results, it is easy to see on which side—the comprehensive, stringent, and compulsory provisions as regards animals, or the permissive provisions, equal to no provision, in the case of human beings—the advantage lies. For while as regards animals the contagious diseases from which they suffer are mitigated and held in check, as regards human beings typhoid fever and other

epidemics resulting from milk-poisoning are increasing in frequency. Is it seemly that our laws should take more thought for oxen than for human life? Whence this difference in the spirit of our laws? The question, I apprehend, is not one of great depth or difficulty. When will those who make our laws recognise that the right of the community to live, and to live healthy lives, is a right precedent to all other rights, and that its claims are paramount?

I am aware, of course, that in 1868, when our Public Health Act was passed, it was not known that milk played such an important part in the spread of disease. But in 1878, when the Contagious Diseases (Animals) Act was passed, the fact was known, and I believe the scope and intention of the section of the Act applicable to "Dairies, Cowsheds, and Milkshops" was an attempt to provide a remedy for the danger which it was then known had arisen. But while ample care was taken in the Act as regards cattle, the like care was not given to the section of it which dealt with dairies, &c., and which was the only provision it contained applicable to the public health. As regards animals, the law succeeded. As regards its influence upon the public health, so far as that is influenced or affected by the milk supply, it has proved a failure in this country. Why? Because its provisions were neither comprehensive nor compulsory.

Indeed, as regards this country, it was most unfortunate that Scotland was included in the Act. For the effect of this was to introduce confusion into our own system, which, with all its defects and faults, had yet the merit of unity of design. A prettier bit of meddle and muddle it would not be easy to find. Is there no hint here of the advantage, ought I not rather to say necessity, of having in this department one power which shall owe only one duty to the country?

But while it created confusion, by introducing H.M.'s Privy Council, and an additional Local Authority into the field, the Contagious Diseases (Animals) Act did not repeal

any of the provisions of our Public Health Act. It left untouched all the powers of the Board, and of the Local Authorities under it. They could still deal, as before, with any nuisance—that is anything, anywhere, “injurious, offensive or dangerous to health,” or “calculated to promote or aggravate epidemic disease.” And that this was the view of the situation and of their powers taken by the Board, is obvious. For it put itself in communication, in usual course, with the Local Authority at Largs, and, finally “remitted *the whole subject* to Dr. Littlejohn, their medical officer, to enquire and report.”

As showing more fully the working of this sort of patch-work legislation, in February, 1879, a few months after the Act was passed, it was found necessary to issue an Order in Council in regard to “Dairies, Cowsheds, and Milkshops,” and this was followed in July of the same year by another Order regarding the same matter. And what has been the result of this tinkering at the subject? As regards this part of the country, the result is *nil*. These Orders merely give power to Local Authorities to make regulations. In keeping with the section of the Act under which they are issued, they contain no compulsory or penal clause. It shall be lawful to make the most admirable regulations, and to do all the most necessary and proper things which one ought to do without any leave, either asked or given, and which, if they were done, would be of unspeakable advantage. But if you don’t do them, *restez tranquille*, care is taken that there shall be no power to make you do them. These Orders in Council serve to show two things—a wonderful care and activity in the public interest, and a marvellous success in doing nothing. With what a fine irony is such legislation called an ORDER in Council!

Is it not time that the permissive element were eliminated altogether from our sanitary laws? As a scheme on paper, it has a specious look. In practice it originates nothing and does nothing. Authority, if it is to bear rule and be respected, must *be* Authority, and *not* Laissez-faire.

Dr. Littlejohn stands in the front rank of those in this country who occupy themselves with sanitary affairs. But much as I may admire his attainments and respect his skill, I cannot think he has been happy in his attempt to deal with the milkhouse. The suggestion to throw the midden off the byre and milkhouse wall is obviously right. But he lays himself open to the suspicion of having acted upon a hasty decision, when he proposes to throw out the milkhouse in the same direction. A reference to the plan will show that the new milkhouse would be in close relation to, and would be overlapped by, the lower end of the midden. I point this out, not by way of casting any reflection, but to show how difficult it is to deal with a steading constructed originally upon principles radically vicious.

However, Dr. Littlejohn’s principle of the complete isolation of the milkhouse is the right and safe one. It is probable that the only principle which governed the construction of a dairy farm-house was the convenience of the farmer. That his calling was, under certain circumstances, one of the most dangerous and fatal of any in the country, was an idea which, until very recent times, it had not entered into the mind of man to conceive. But a large and painful experience has satisfied the country that milk-poisoning is no longer *the fad* of a professional enthusiast, and it is time that the legislation of the country should recognize the fact. The law ought to enact that dairies shall no longer be constructed after models proved to be dangerous, and that all dairies already so constructed shall be altered, and that the milkhouse shall be so placed as to be remote from dungheaps and all possible sources of contamination of the milk.

An experience in 1857 will serve to show what may be done by exhalations from manure heaps. I was then the resident medical officer in the Town’s Hospital, Glasgow. In the summer of that year gastric derangements, diarrhoea, and dysentery broke out in the west wing of the house. Several deaths occurred. The inmates living in that wing

did not differ in condition or circumstances from those living in the east wing. Their diet was the same and there were no structural defects in the building. At length Dr. Eadie, the visiting physician, discovered that beyond the boundary wall on the west side, on a siding of the Edinburgh and Glasgow Railway, the manure collected in the city or some of it, was kept stored in trucks with a view to its removal from time to time to the country. A stop was put to this practice and the west wing became as healthy as the east one. But in about six weeks after, bowel diseases began to reappear, and it was found, on investigation, that manure was again being stored on the railway siding. Could milk with its proven capacity for absorbing (and almost certainly multiplying) the contagium of infectious diseases, have been safely kept in such an atmosphere? And though an experiment on such a grand scale is not seen every day, who is there, who has been any time in practice in the country, who has not seen deranged digestion, impaired health, typhoid fever, or diphtheria, &c., from dungheaps or other nuisances kept near to dwelling-houses?

This experience is highly instructive from another point of view. It shows the approved method of dealing with a nuisance. On an outcry being raised, it is first opposed, then some show of remedy is made. But as soon as the occasion, epidemic it may be, is over, or, as in this instance, as soon as suspicion is thought to be lulled, no time is lost in returning to the old order of things—time-honoured use and wont. I admit that there are occasional exceptions, but, as a rule, in no region of affairs is there more hollowness than is to be found in the disposal and treatment of nuisances.

On one occasion I had a case of typhoid fever in a detached house in a neighbouring village. It was the only case, so far as I could discover, of typhoid fever in the district. The cause of the disease could not be, or at all events was not, traced. For, curiously enough, there is quite a remarkable sensitiveness on the part of some people,

otherwise not wanting in good sense, which makes them resist, if, indeed, they do not resent, any suggestion of possible insanitary conditions about their premises.

Probably there is no one who has tried to get some nuisance removed, who has not been told that he is labouring under a delusion—that the water has been used for ever so long, and that the dungheap has stood where it is for half a century, and nobody been the worse for it. I remember having been told on one occasion that it was “all nonsense, and that people lived far longer langsyne when the midden stood before the door and folk gaed oot an’ in ower’t.” And there can be no doubt the subject is a puzzling and perplexing one to the uninstructed.

After a time a case of diphtheria occurred in the same house. It was the first case in the village. Then other cases began to appear around the house, and eventually the whole village suffered. There were three deaths.

It was still asserted that there was not and that there could not be anything wrong in the house, that there was never any bad smell, &c. And at no time did I ever perceive any. But I was always conscious of something peculiar, not exactly closeness, but a sort of spent or exhausted feeling as if the air did not sufficiently support respiration.

At last a plumber was got to examine the premises. He found the upper surface of the lead pipe running horizontally from the water closet riddled with holes, from no bigger than a pin-point to as large as a pea might go through. If we accept the statement that there was never any bad smell, the explanation will probably be found in the situation of the pipe, which was, relatively, so remote that any offensive effluvium might be rendered imperceptible by dilution in the general atmosphere.

The mortality returns of a district or parish afford, at best, but a rude and imperfect test of the health of the district. There may be, and there is, much ill-health and sickness of which no trace will be found in the registrar's

reports. A far more searching and delicate test is to be found in the general state of health of the community. And it may be taken as certain—I purposely pass by typhoid fever and diphtheria because undoubted—that where bowel diseases and certain forms of disordered and impaired digestion, and throat affections are of frequent occurrence, the sanitation of the house or of the locality, as regards the air or water supply, or both, is defective and dangerous.

I said a moment ago “the contagium of infectious diseases” from a desire to avoid what might be regarded by some as a mere theoretical statement. But no one, in the least attentive to modern research, can, I think, longer reasonably refuse to admit that, in this field, the vitalists are more surely and firmly founded than the chemists. Pasteur, Koch, and others have shown conclusively that microscopic organisms play an active part in the induction and spread of disease. And there is now, I think, nothing more probable than that diseases, hitherto not suspected of being infectious, shall yet be found to be so.

One point made clear by these researches is that these organisms, when mature, are very sensitive to temperature and varying atmospheric conditions, &c. And it would be as reasonable to look for poppies in full bloom amid the frosts and snows of winter, as to look to find these mature organisms active at the same season of the year. Another and an extremely important point has also been established. While the mature organisms are themselves easily destroyed, the life of their spores or germs is almost indestructible by natural agencies. Pasteur has established, in regard to the splenic fever of cattle, that the germs or spores of the organism which produces that disease may be preserved in the earth in which an animal which had died of it had been buried, to be eventually brought to the surface by the earthworm to produce a new epidemic of the same disease. What a vision is here disclosed of the subtleness and energy of All-Pervading Life!

We have not, so far as I know, had a fact like this established regarding the diseases which affect human beings. But may we not reasonably conclude that if the germs or germlets of *e.g.* typhoid fever should find their way into the water supply of a dairy the same result would ensue—an outbreak of typhoid fever? It would follow from this that to prove the water supply chemically pure, would not be to prove that the water was wholesome—a most important point in endeavouring to trace typhoid fever to milk-poisoning. For it might thus be possible, in tracing an outbreak of typhoid fever, so to connect it with a certain milk supply as to be morally certain they were related as cause and effect, and yet fail to demonstrate the fact. The same result would follow, of course, if, instead of finding their way into the milk indirectly through the water, the germs or spores were conveyed directly into the milk (*e.g.* by the hands of the dairy-woman and nurse (*see ante*), in milking or dabbling among the milk with unwashed hands) from a case of fever in the house, all knowledge of which had been successfully concealed. This is no imaginary difficulty, but one which, I learn from Dr. Russell, he has sometimes encountered.

At present, in the case of a farmer holding under a lease, I presume the burden of providing a new milkhouse would fall upon him. But if the efforts of those who are seeking to introduce compensation for improvements into our land laws shall be successful, as it seems likely they shall be, the alteration I am here insisting upon would eventually fall under improvements.

And let me here again point out that I am seeking to introduce no new principle into the law.

It was found that those who wrought in factories, &c., were frequently either injured or killed by becoming entangled in the machinery with which they wrought. The law ultimately stepped in to protect the workers. It said to the owners or users of the machinery, “This thing cannot

be allowed to go on. You must remedy it. Safeguard your machinery or suffer the consequences."

Why ought not the same rule to be applied to dairies now that we know what are the conditions which make a dairy dangerous to the public safety? If legislation was necessary where only the worker might be injured, I maintain that it is much more necessary, where, not the farmer only or his household, but the whole community may be endangered, numbers poisoned, and many die. Given (they are unhappily too often given) the favourable combination of circumstances, and it is as certain that a farm-house constructed like — will, through its milk supply, spread typhoid fever in a city, as that a worker caught in the machinery of a factory will be dragged in and injured or killed. Given these circumstances, and the milk of the dairyman becomes impregnated with a poison so subtle as to mock the skill of the chemist, and yet deadly as the draught of the cunningest poisoner.

Unless the principle of responsibility be introduced, and a penalty enacted, as was done in the case of factories, legislation will be incomplete, and little good will be gained. As in the past, the provisions of the law will be disregarded. What was thought to do well enough fifty years ago, will be thought good enough for to-day. The milkhouse will remain in its favourite position "in the midst of the nuisance"; dung-heaps instead of being removed to a decent and safe distance from the living-house, will be so placed as to reduce the work of cleaning the byre to a minimum; and drains will continue to be led close by or into a well without the slightest concern as to what the effect may be upon the water.

Reference was made in my correspondence with the Board, at the time when typhoid fever was prevalent in Largs, to small dairies, or byres rather—places where it might be one, or perhaps two or three, cows are kept for the sale of milk. It is natural that there should be a feeling of sympathy for such small dealers in milk. But the question here is not

one of sympathy. And I maintain that sub-section 12 of section 5 of the Dairies Order of July, 1879, is false in principle and dangerous in practice. It runs thus, "A person who sells milk of his own cows in small quantities to his workmen and neighbours, for their accommodation, shall not, for the purposes of registration, be deemed, by reason only of such selling, to be a person carrying on the trade of a cowkeeper, dairyman, or purveyor of milk, and need not, by reason thereof, be registered."

Now, the effect of that is to take from under the supervision and regulation of the Local Authority a large number of those, who, in country communities, keep cows and sell milk. And it thereby defeats the provision which the law sought to make for the protection of the public health. In practice it will be found dangerous. It is notorious that many of the places of these small dairymen are in no manner of way, neither as regards drainage, lighting, ventilation, nor cubic space, suitable for the purpose to which they are applied. And as regards the sale of milk by such persons, any place is thought good enough. Three or four years ago, when typhoid fever was prevalent in a neighbouring parish, I was informed, when visiting in the parish, that milk was kept for sale on a table standing close by a bed on which a person was lying ill of typhoid fever.

The need of hospitals has been long felt in country places. I have often heard my father-in-law, the late Dr. Campbell, for upwards of sixty years a medical practitioner in this district, speak of the difficulties and dangers he had encountered in dealing with infectious disease. The late Mr. Caskie, Medical Officer of Health, used often to speak in the same way. And an incident in my own practice will serve to bring vividly into view what goes on in small communities where there is no hospital accommodation.

Some years ago I was called to a case of typhoid fever in the town. The house was an old thatch-roofed one, and it was situated in a narrow street. It consisted of two apartments, unless, as sometimes happens in such houses, the

space under the thatch be used for sleeping in. The occupier kept two or three cows and sold milk. My patient lay in a boxed-in bed, in what I believe was the larger of the two apartments. It measured 13 feet by 9 feet, and was 6½ feet to the ceiling. This was the living-house or kitchen, and here the milk was sold. My patient was the only female in the house. No one belonging to the house could nurse her, and no one could be got to nurse her. Would any training home for nurses have sent two of their staff to such a hovel? At last a poor wandering woman, temporarily in the town, was got to take charge and do the best she could. To most people it will not be necessary to say how the case ended.

What about the milk? The poor man was a decent, honest fellow who had the credit of giving the milk as the cows gave it, and people *would* buy the milk. It continued to be sold, but a woman living close by was got to take charge of it.

But typhoid fever is not the only disease which may occur in a dairy. I have had to treat in a dairy small-pox, scarlet fever, &c. And if only our Legislators and Boards could be made to feel but a little of the anxiety and misery such cases bring to the physician, I should have more hope of better laws and a better administration of them.

I am happy to be able to say that such a state of matters as I have just described will soon be no longer possible in Largs. Almost as soon as this paper can be in the hands of the printer, we shall be in the possession of an hospital, at least equal to any cottage hospital in the country for its excellent arrangement and admirable accommodation, and fully equipped for any emergency.

But it would be ungraceful and unworthy in me were I to pass from this subject with no more than the bare mention of it. That it is as I have said, we owe entirely to the open-handed generosity of Mr. John Clark, Paisley—one of a family long associated with Largs, and distinguished in the West of Scotland for their philanthropic liberality.

But hospital accommodation cannot be left to private benevolence, and permissive legislation has failed to provide it over the country. And without hospitals, how is it possible for Local Authorities to deal with cases of infectious disease? A minimum, at least, of hospital accommodation ought to be compulsorily provided by statute.

But there is another, and a larger and wider question in connection with our milk supply which I have not yet touched, and which I shall not presume to touch, save only in the most passing and general way. I have been discussing the question of our milk supply in relation to the contamination of the milk from external sources. But there is possibly a yet far more important question. What effect has the state of health of the cow upon the character and properties of its milk?

And here, it seems to me, scientific research is on the threshold of discoveries of incalculable importance and value. At this moment the foremost minds of the day are, among kindred and equally interesting investigations, earnestly striving to determine "whether a certain disease which occurs chiefly among horned cattle—*perlsucht**—may possibly produce tubercle, scrofula, or even consumption in man; whether possibly phthisis can be produced in children by the milk of the cows thus affected; whether phthisis is not perhaps to a great extent produced in man by the use of products derived from animals thus diseased."

And already it has, by some, been held to be proven that "*a disease does occur in man*" so like "*that it may be mistaken for general tuberculosis, and is really bovine tuberculosis, modified by its transmission to the human subject.*" And "*this disease has been communicated to the calf, lamb, goat, and other animals, by feeding these animals on the milk of an affected cow,*" &c.

Is there not, in such a fact as this, enough to "give us

* *Perlsucht*, pearl disease, from the pearl-like "nodules which occur chiefly on the serous membranes, in the lymphatic glands, and in the lungs."

pause," and make us consider the whole question of the sanitation of our dairies very carefully and very seriously? Hitherto far too little attention has been paid to the housing of cows. Byres or cowsheds, as a rule, are ill-lighted, and ill-ventilated. In many instances, probably most, there is no attempt at either lighting or ventilation. There is generally a total absence of proper drainage, and the surroundings of the farm-steadings are filthy in the extreme. Proper facilities, or any facility at all, for cleansing the interior of the byre, are either insufficient or wanting, and this is especially the case in small places. Safe structural arrangements, as far as my knowledge goes, are everywhere wanting. And the cubic space allowed for each animal is altogether insufficient. I should say that in almost no direction is legislation more needed than in making compulsory provision for a liberal minimum of cubic space for each cow.

In order that some distinct and definite idea might be got upon the latter point, I requested the sanitary inspector to measure for me five byres. For the larger class of byres I took —, and the adjoining farms referred to in Dr. Littlejohn's report. From my small success in inducing the Board to deal with —, it may possibly be understood without my saying it, that no notice has been taken by the Board of these adjoining farms, though of equally faulty and dangerous construction with —. For the smaller class of byres I took the two in the town nearest to my own house. One of these is the byre attached to the house in which the case of typhoid fever already mentioned occurred. I have the authority of the sanitary inspector for saying, that both as regards the large and small dairies, he does not consider them in any manner of way the worst in the district.

One measures 17 feet by 13 feet, and is 8 feet 6 inches in height. The official register shows, and as a matter of fact it is so, that four cows are kept here. The other measures 24 feet by 10 feet, and the roof rises from 6 feet to 7 feet

2 inches in height. There are stalls for three animals in the breadth at one end, and the other end is used as occasion requires as a shed for storing purposes, thereby reducing the breathing space still further. The official register shows that three cows are kept here. Let it be borne in mind that these places are without drainage or ventilation, and that they are closely surrounded by such accessories as dungheaps, privies, a piggery, &c.

The byre at — figured in Dr. Littlejohn's sketch-plan, measures internally $30\frac{1}{2}$ feet in length by $19\frac{1}{2}$ feet in breadth. The perpendicular of the side walls is 8 feet 3 inches, and the gable-end rises at the ridge to a point 15 feet 9 inches high. About one-half the byre is open to the roof, the other half is covered in with a ceiling at a height of 8 feet 3 inches. There are twenty cows kept in the byre. The contents may be taken at 6020 cubic feet, or 300 feet per cow. The milkhouse measures $13\frac{1}{2}$ by 12 feet, and is 7 feet 8 inches high.

Of the two adjoining farms referred to in Dr. Littlejohn's report as being constructed on the same "most objectionable" model as —, the byre of No. 1 measures 42 feet 9 inches in length, by 17 feet 6 inches in breadth. The perpendicular of the side walls is 9 feet 6 inches, and the gable end rises at the ridge to a point 19 feet 6 inches high. In this instance there is no proper ceiling, but the joists at the height of the side-walls are more or less covered with boards loosely or irregularly laid on. There are twenty-six cows kept here. The contents, if taken as if the byre were clear to the roof, would give 10,847 cubic feet, or 417 feet per cow; but if taken at the joisting, 7107 cubic feet, or 270 feet per cow. The milkhouse measures 12 feet 8 inches by 8 feet 3 inches, and rises from 8 to 11 feet in height.

The byre of No. 2 measures 41 feet in length, by 19 feet in breadth, and the whole space is shut in by ceiling at a height of 8 feet 4 inches. There are twenty-five cows kept here. The contents are 6490 cubic feet, or 260 feet per cow.

In all these places there is some attempt at ventilation,

but it is insufficient in amount and otherwise defective. Of what advantage are openings for ventilation when the surrounding atmosphere is impure? In one of these steadings the openings in one wall are within a few feet of the large midden of the establishment, and on the other side one of the two openings opens into a shed, and the other into the boiler-house. This last is one of the most recent improvements, and I direct attention thus pointedly to it, as showing how blindly ignorance works in sanitary matters.

In another of these steadings the byre is ventilated into the milkhouse by an opening in the wall, measuring 2 feet by — inches! Could ignorance and carelessness much further go? Much virtue, truly, in "Orders" and "Registers"!

The state of matters is simply disgraceful. And in saying this I wish to say in the strongest manner, that the farmers, for the most part, are not to be blamed. Their wives and daughters spare no pains to make and to keep everything as clean and tidy as possible. I do not know a farmhouse where, on entering, I would not find everything bright and clean within. How much their labours must be increased by the want of external cleanliness! But what avails all their toil against the general sloppiness and puddle of undrained steadings, with middens and all other accessories as closely surrounding the milkhouse and the living house as they can possibly be huddled together. Cleanliness is no longer next to, it is a part of, godliness. And no matter how "scrupulously clean internally" a dairy may be kept, milk can never be safely stored there so long as the dairy is allowed to remain *unscrupulously unclean externally*.

The truth is, and it grieves me that I must needs say so, but those who see into our system and know how it works in the country, well know that it is true that the whole thing is as hollow as an eggshell. Ordering and registering and administration are but an idle show. And while the country is in the belief that, as regards its sanitary affairs, all is well—much in regard to general sanitation, and almost

everything as regards milk supply is in utter neglect and disorder, and is as bad as bad can be.

These are no imaginary statements. I have furnished the proofs. But I do not believe that Largs is—and it is not in this respect—worse than the rest of the country. Witness these ever-recurring and ever-increasing milk-poisoning epidemics everywhere. And I challenge investigation. If the Local Authority, the Commissioners of Supply for the county, will appoint a committee of three members, of whom Dr. Russell, Medical Officer of Health, Glasgow, shall be one, to examine and report upon every dairy, byre, and milk-shop on the Register of Largs, and one or two others not on the register supplied to me in 1880, as regards lighting, ventilation, facilities for cleansing, drainage, water supply, construction, general arrangements and surroundings, safe storage of milk and cubic space,—I shall undertake to bear the costs of the investigation and the publication of the report, in the event of its being found that, as regards these matters, these places are as they ought to be, or anything like what they ought to be; the Commissioners, on their part, to do the like, in the event of its being found that on these points the sanitary condition of these places is faulty and defective.

But this is no local question. It has a wider scope and a larger and deeper interest. Rightly regarded it is a question of national importance. And when the country shall awake and its intelligence become aroused to the danger in which we stand, our legislators will soon see both what to do and how to do it.

If only we could have applied to our dairies Lord Palmerston's advice in regard to the fever dens and plague spots of Glasgow, we should soon cease to hear of such frequent epidemics, we should be spared much needless pain, and sickness, and sorrow, and the registrar's death-roll would record the names of fewer victims.

When will the multitude take these things to heart and learn that these epidemics are of man's own procuring, that

they are, truly, the Divine Protest against neglect of cleanliness, against careless indifference to the laws of health, and against perverse ignorance, which, turning a deaf ear to all counsel and reproof, refuses to be instructed.

Whether among our Scotch members, busy in the public service, with what, for the most part, are far meaner concerns, any one shall be found to raise this question into a public one I know not. But this I know, that there is no question of greater common interest or which involves more vital issues.

LARGS, *July*, 1882.

APPENDIX I.

ANALYSIS OF WATER OF WELL REFERRED TO IN DR. LITTLEJOHN'S REPORT.

City Analysts' Laboratory,
138 Bath Street,
GLASGOW, *3rd August*, 1881.

CHEMICAL ANALYSIS of a sample of water received on the
30th ult., in a sealed jar, from Mr. John Jack, Sanitary Inspector, Largs.

	Grains per gallon.
Carbonate of Lime, - - - -	2.66
Carbonate of Magnesia, - - - -	.28
Sulphate of Lime, - - - -	2.31
Nitrate of Lime, - - - -	1.19
Nitrate of Magnesia, - - - -	3.85
Chloride of Magnesium, - - - -	.14
Chloride of Sodium, - - - -	2.73
Alumina and Phosphate of Lime, - - - -	.14
Silica, - - - -	.07
Organic and Volatile Matter, - - - -	.98
Total Solids, 14.35	
Hardness, degrees per gallon, - - - -	8.7°
" temporary, precipitated by boiling, - - - -	1.0°
" permanent, after boiling, - - - -	7.0°
Oxygen required to oxidize the organic matter, - - - -	.036
Equal to organic matter, - - - -	.22
Ammonia, free or "saline," - - - -	.001
Do. organic or "albuminoid," - - - -	.010
Total Ammonia, - - - -	.011

REMARKS.—The albuminoid ammonia in this water is high, and there is a considerable quantity of nitrates, showing clearly that the decomposition and oxidation of animal excreta were finding their way into the well. The water is almost quite clear and colourless, but I do not consider that it can be used with safety.

(Signed) WILLIAM WALLACE.

APPENDIX II.

ANALYSIS OF WATER OF NEW WELL.

City Analysts' Laboratory,
138 Bath Street,
GLASGOW, 4th October, 1881.

CHEMICAL ANALYSIS of a sample of water from — on
the — Estate, received the 29th ult. from —
Esq., Largs.

	Contents of a Gallon in Grains.
Carbonate of Lime, - - -	3·85
Carbonate of Magnesia, - - -	1·57
Sulphate of Lime, - - -	1·14
Sulphate of Magnesia, - - -	·64
Chloride of Magnesium, - - -	·83
Chloride of Sodium, - - -	3·82
Alumina and Phosphate of Lime, - -	·21
Silica, - - -	·14
Organic and Volatile Matters, - -	1·03
	<hr/> 13·23 <hr/>
Hardness, degrees per gallon, - - -	8·0°
Do. temporary, precipitated by boiling, -	3·7°
Do. permanent, after boiling - -	4·3°
Oxygen required to oxidise organic matter, -	·042
Ammonia, free or saline, - - -	·002
Do. organic or albuminoid, - -	·008
	<hr/>
Total Ammonia, - -	·010

REMARKS.—This water is almost quite colourless and is clear and transparent. It contains no nitrates; and, although the "albuminoid ammonia" is a little higher than is usually found in first-class drinking waters, I think it is due to vegetable matter and does not necessarily indicate the presence of organic impurity. The water is of moderate hardness and quite suitable for all domestic purposes, and I am of opinion that it is perfectly good and wholesome.

(Signed) WILLIAM WALLACE.

The date is instructive as showing the length of time occupied in considering.

It will be seen on a comparison of the two reports that the new supply is little, if any, better than the old. It is true it contains no nitrates. But the nitrates as nitrates are harmless. Their importance lies in the indication they afford of the animal source or origin of the pollution. The albuminoid ammonia, which may be regarded as the crucial test, is .010 in the old well, and .008 in the new. Dr. Wallace thinks it due to vegetable matter. Yet the chlorides are relatively much higher in the new. Has Dr. W. taken sufficient account of this fact? But, in any case, I must demur to the opinion that water defiled with vegetable pollution is perfectly good and wholesome. Water so polluted has been found to be injurious to health.

R. K.

