**How to dispose of our refuse : a review of some of the principal systems proposed or adopted : being the contribution of Dr Syson (Medical Officer of Health for Salford) to the discussion on the above subject, at the Manchester and Salford Sanitary Association.**




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# The Great Sanitary Question of the Day.

# HOW TO

# DISPOSE OF OUR REFUSE.

## A REVIEW

OF SOME OF THE PRINCIPAL SYSTEMS PROPOSED OR ADOPTED,

BEING

## THE CONTRIBUTION OF DR. SYSON,

*(Medical Officer of Health for Salford,)*

TO THE DISCUSSION ON THE ABOVE SUBJECT,

AT THE

## Manchester and Salford Sanitary Association.

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# HOW TO DISPOSE OF OUR REFUSE.

MR. CHAIRMAN,—

GENTLEMEN,—

Last week we had the pleasure of listening to two very able and well-digested papers, on the sanitary advantages of the Water Closet system over Ashpits. To night, I propose not only to review these two papers, but also briefly to discuss the advantages and disadvantages of all the more prominent systems now in use.

Before commencing, I should like it to be distinctly granted that I have a perfect right to condemn, if necessary, any system or systems which can be proved to be imperfect. I cannot, in any discussion that may hereafter arise out of this question, allow any personal motives to be laid to my charge, and I shall not for one moment trouble myself to answer them. I take it for granted that any system or plan put forward publicly is open fairly to public criticism, and I hope you will support me in this view.

I have no particular pet system to urge for your approval, but I will endeavour honestly to give all schemes a fair, impartial hearing.

If we were to accept all Messrs. Newton and Hollon asserted in favour of Water Closets, of course we should have no excuse for not immediately urging their universal adoption. Both these gentlemen, however, forgot to tell you one single drawback or one single defect.

I will at once admit that the water-carriage theory is perfect in theory, but when we come to reduce it to practice, it is found to be most defective.

I will also cordially support every word both these gentlemen uttered with regard to the deleterious effects of the effluvia, miasmata, and exhalations arising from collections of fæcal and

other decaying matter. I am sure all in this room will cordially endorse their sentiments on this subject. Let me mention, however, that great difference of opinion still exists in the minds of corporations on this matter.

The answers given to the River Pollution Commissioners by the Corporations of Manchester and Salford will illustrate this. To the following two queries, the following are the answers given by Manchester and Salford:—

*Qy.* (No. 22, page 18).—Is the cleansing of the Privies, Middens, and Ashpits, complained of as a nuisance, affecting the health and comfort of the inhabitants?

*Answer.*—Manchester: "As a matter of fact, the cleansing of Middens, Privies, and Ashpits is not complained of by the occupiers of the houses as a nuisance affecting their health and comfort. For some time past, carbolic acid has been used with much advantage in connection with the removal of the night-soil. Of course differences of opinion exist, and are expressed by gentlemen who take interest in sanitary questions, as to the advantages or disadvantages, in a sanitary point of view, of the system of Privies and Ashpits as opposed to Water Closets."

Salford: "Occasionally."

*Qy.* (No. 23, page 18).—Is sickness attributed to those Privies, Middens, and Ashpits?

*Answer.*—Manchester: "Certainly not generally; but, as stated in the previous answer, difference of opinion does exist as to the effect of that arrangement."

Salford: "Decidedly so, as appears from the following extract from a recent report of the Medical Officer of Health, marked H."

I will now at once proceed to mention some of the most prominent defects of the Water Closet system.

The necessity for the isolation of infectious diseases is now universally admitted. The germs of infection are also generally allowed *par excellence* to exist in excrementitious matter. By means of Water Closets, every house is put in immediate communication with its neighbour. So perfectly is this arrangement carried out,

that it is no uncommon thing to find the tenants of whole rows of houses able to tell when any disinfectant has been used by their neighbours.

I shall be answered here that this is owing to defective construction, and not to any fault in the system itself. So it may be; but the perfect construction of Water Closets is so difficult, and so expensive, that this imperfection is almost inalienably connected with the Water Closet system.

In my own house, I found that no fæcal matter had gone directly into the drain since the Water Closet was first built. I doubt whether a perfect Water Closet could be found anywhere in Manchester, or Salford, or Broughton. By a perfect Closet I mean this—a Closet where, on raising the pan, the fæces are immediately conducted into the main sewer. When you lift the handle, do you suppose for one moment that the little water which flows is enough to carry the contents of the pan into the sewer? Just think how much water would be necessary to effect this? You know how far, as a rule, the closet is from the sewer? It is connected with the sewer by means of sanitary pipes. Some fifty yards, at least, will generally have to be traversed before the sewer is reached. Is it not physically impossible for any moderate amount of water to carry the fæces as far as this? The drain, too, is generally laid with far too little fall, and is hardly ever without several sharp curves. This causes the whole course of the drain to become an unseen, but no less deadly, cesspool. No trapping will thoroughly overcome this evil. Even supposing the trap to be perfect, will not the water keep absorbing and giving off gas? You must remember the pressure there is in most of these traps: I have seen them boiling with escaping gas.

I am sure I can confidently ask all of you whether you ever yet met with a Water Closet where, on lifting the handle, you perceived no smell to arise? No Closet is perfect—that is, no house is free from the danger of infection—where the slightest amount of sewer gas can find its way into it.

Then, again, we were told of none of the practical difficulties we should be sure to meet with, were Water Closets introduced into a

very low class of property. Cottage property owners say, and I think rightly, it would take all the rents to keep them in repair. You saw some photographs of very cheap Water Closets exhibited last Friday. Now, the cheapness of these Closets is certainly very tempting; but will any of their advocates tell me how long the supply box would last, exposed to the severity of a hard winter? Once let the Closet in a poor house get out of repair, and the state of things consequent may more readily be imagined than described.

Again, supposing Water Closets were adopted to-morrow, our present system of sewers is quite inadequate to carry off the additional burden which would be thus laid upon them. Before any large increase in the number of Water Closets is allowed, you must be prepared to re-sewer the whole town. I sometimes am inclined to go in for Water Closets solely on this ground, for, though the cost would be great, our sewers generally are in so disgraceful a state that any thing which would necessitate their re-laying would be an inestimable, though costly, benefit. At present, nobody knows anything about our sewers; even the exact whereabouts of many of them is a mystery. The sooner we hear no more of the absurd nonsense of "streets being well sewered," the better.

I do not for one moment blame those who laid these sewers for their past work, but I do blame them for not having the manliness to come forward now, and confess that they are failures. Thanks to our sewers, we have miles and miles of cesspools constantly generating, or, according to some, *exciting* fevers in our midst. The Water Closets, and universally defective house drainage, render this death-dealing system as perfect as it could possibly be.

There is scarcely a sewer that does not stink, and this alone is a proof of their imperfection.

I think I am also right when I say that there is hardly a medical man in the town who takes up the cause of Water Closets. Does not this speak volumes against their practical defects?

I think I have now said enough to convince you that, however perfect Water Closets are in theory—and I again admit that they are perfect in theory, the defects inalienably connected with their construction are so great as to make us pause before we range

ourselves amongst those who advocate their universal adoption. Their comfort is admitted; their convenience is also admitted; but I have not hesitated to point out their insidious failings.

I will now tell you—and neither Messrs. Newton or Hollon have as yet told you—what Water Closets might be, and ought to be, before they are even suggested for our adoption.

A Water Closet ought to be so constructed as to discharge immediately into the main sewer. Any Water Closet which simply discharges itself into the drain, and gradually, by a *vis a tergo* force, propels the previous discharges forwards, is necessarily imperfect, and is also a nuisance dangerous to health.

I know I shall be told that fæcal matter is very soluble, and very soon becomes dissolved. In answer to this, I can bring forward the practical experience of all surveyors, who tell me that at the bottom of the closet pipe, where it joins the drain, there is always a collection of fæcal matter. Again, when you lift the pan, it is not until the fresh water stirs this foul collection up that you get the worst smell. The longer you hold the handle up, the stronger does the smell become.

If Water Closets are adopted, you must also be prepared to be lavish with your water supply. The quantities mentioned by Messrs. Newton and Hollon are far too low. At present, you are not prepared to supply a sufficient quantity of water. I think the River water might be made available for this purpose.

The supply-box must also be well protected from the Frost. Now, in no Water Closet that I have seen has this been taken into consideration.

As to the ultimate destination of the diluted fæces, let me say a few words. We all agree on this one point:—The River is not their proper receptacle. We do not poison ourselves as much as we poison our neighbours lower down. We in turn get the benefit of the filth of our friends higher up the River.

I think our railway banks might easily be brought under cultivation. All they want is Labor and Manure. Just think how many acres of at present unprofitable ground might be supplying the

towns with fruits and vegetables? The railway slopes might surely be turned to better purposes than merely growing rank grass, to be set on fire in summer time? The experiment of Cottage Gardens might here be tried on a very extensive scale. How many men would the proper cultivation of our railway banks find employment for?

It is out of place here to go further into this matter, but the distribution of either liquid of solid manure to these railway gardens would be practically very easy.

Now, let me lay before you and criticise a few of the more prominent schemes which have been proposed or carried out by the dry system, or land-carriage advocates.

At present the following are, I believe, those chiefly worth notice:—

1. Captain Lienur's System.
2. Moule's Dry Earth Closet.
3. Beeche's Dry Ash Closet.
4. Wheehouse's Patented Inclined Plane Ashpit.
5. The Manchester Scheme.
6. The Goux Patent.
7. Morrell and Robert's Patent.

The first of these is described as "a system for daily unoffensive removal of fæcal solids, fluids, and gases by pneumatic force, combined with an improved method of sewage utilization. It is a system of "Water Closets without water," and has been extensively tried at The Hague. I must refer all who are curious to Krepp's Book on "The Sewage Question," which is in fact an advertisement of this system. This book contains a good deal of useful information, but it also clearly shows, on its own statements, that it would never do for English—or I think any—use. One fact alone will show its impracticability:—During a long-continued frost we should be liable to have on hand some hundreds of thousands of barrels stored with urine and fæces.

The second on my list, Moule's Earth Closet, is to too well known to need explanation here. I am told on very good authority that where many women have occasion to use these Closets the splashing is very unpleasant, and, of course, this at once does away with its "dry" advantages.

I think the following extracts from Krepp will make the boldest of you pause before adopting Moule's plan here:—

"The annual produce of an average individual being 10 cubic feet of excrements, a city of 100,000 inhabitants furnishes 1,000,000 cubic feet of fæcal matters including the earth, to be transported twice, first into the city and then out again into the country.

"As all this transport must of course be effected by waggons, it is evident that the cost and trouble of the same would fully swallow up the proceeds of the manure obtained, just as is the case with the other systems already mentioned. Besides this, there is the nuisance of a great number of waggons continually obstructing the streets, first by bringing 3,500,000 cubic feet of earth into the town, and then by taking 4,500,000 cubic feet of compost out again into the country, which circumstance alone would forbid the introduction of this most cumbrous method."

No. 3 is, to my mind, the best Ashpit system I have yet seen in operation. It was devised some ten years ago by Mr. Beeche, Agent, New Bailey-street, Salford, and has been in more or less successful operation ever since.

I append a lithograph, which will explain the plan and principle of these privies.

The main faults are these:—It has no drain, and consequently, as the ashes are insufficient when many females and children use these conveniences, the pit is often wet. Mr. Whitworth's urine catcher, and a drain as well, would, perhaps, obviate this difficulty. Again, the whole of the cinders are thrown into the ashpit, causing both waste and imperfect disinfection, or antiseption.

The objection made by Mr. Newton—that it provides for ventilation by means of a flue going through bed-rooms—is only an accidental one, and forms no part of the system itself.

For a dry Ash Privy for common use, it is to my mind the best yet devised; but I think that a combination between Mr. Beeche and Mr. Morrell would lead to the construction of a better privy than that now advocated by either of these gentlemen.

Next comes Wheehouse's system, which is described in his

specification as "An Improved Mode of Constructing the Ashpits of Privies," and in describing the specification, Mr. Wheehouse uses these words :—"It is a diagonal partition to guide the ashes to the under side of the seat of the privy, by which means the excreta are covered every time any ashes are thrown into the ashpit, &c."

Mr. Wheehouse is an ordinary workman, and deserves credit for his efforts to promote the welfare of his fellows ; but his plan is too crude to deserve our serious attention here. I have only mentioned it because to Mr. Beeche's plan, and Mr. Wheehouse's sliding board, the "Manchester Plan" owes its origin.

Now comes a more stately, but more radically defective, plan than all the others combined—"The Manchester Plan." I am glad I am told it is "*The Manchester Plan*," and not Mr. Lyne's, the surveyor whose name it bears, for I can now with more good grace pull it to pieces.

The first objection to the Manchester Plan is two-fold—its needlessly large size, and its cost. Mere cost certainly should not be allowed to hinder the adoption of any scheme, if it is only a perfect scheme. All the advantages said to be gained by the Manchester Privy are obtained at a much less expense, and at a much less waste of land, in Mr. Beeche's scheme. I am told by experienced men that a new Ashpit could not be built for less than £20 to £25. The conversion of an old Ashpit might in some cases be done for £5; but frequently it would cost quite as much, if not more, than a new one.

Another serious objection is the open grid to the drain. We all know how soon a drain becomes choked up in an Ashpit. The force of this objection is strengthened when the Ashpit drain is used as a means of ventilating the sewers. Almost every three months the Ashpit floor would have to be raised in order to cleanse this drain ventilator. Of course a more scientific and proper way of constructing this drainage might easily be devised, but I criticise the plan as it has been offered to the public.

Again, no fixed, immovable cinder sifter has ever yet been found to answer. The inclined plane, too, *will* get blocked up. It is all very well to point to the rake which hangs up near this grid. How long would this rake remain in cottage property ? How long would this grid be free from the necessary messes made by children ?

Speaking of children—there is this defect common to every scheme. Seats are provided for grown-up persons, but the children are forgotten. This indirectly contributes more to the filthy state of Privies than most people imagine. The inclined board has another fault: it either directs the ashes into the Ashpit, and so avoids disinfecting the fæces, or it directs them into a sort of mid-way destination. This illustrates my remark about the excessive size of the Ashpit. I should have pointed out, too, that the ground under the feet should be utilised, in preference to taking space *behind* the seat.

Another, and to my mind fatal objection is, the saddling a Privy scheme with the burden of ventilating our foul sewers. When the method of ventilating is, too, a long ago exploded one, the objection becomes more fatal still.

No flue containing foul air ought to pass through any house, much less sleeping room. If in some cases this is unavoidable, the flue most decidedly should not be a brick one.

Sum all these objections up—weigh them; and I shall be surprised indeed if you do not agree with me in condemning the Manchester Plan as cumbrous, expensive, ineffective, and therefore useless.

In reference to the ventilation of sewers, I would also ask whether it is equitable to make property owners, especially cottage property owners, pay for ventilating our sewers? Ought it not rather to be done at the cost of the public at large.

To my mind, the ventilation of sewers should be entirely independent of any Ashpit or other system. Mr. Alderman Pochin, M.P., suggests the erection of cupolas for this purpose, and this appears the most effective means yet suggested.

No. 6. The Goux System is on trial at Rochdale. In it no ashes are used, the receptacle of the soil being a barrel lined with an absorbant and disinfectant. The same objections, I think, can be urged against this plan as I urged against Captain Lienur's plan.

No. 7. Mr. Conyers Morrell's patent. This scheme certainly has an appearance of efficiency. The cinders are economised for fuel.

The fine ashes are directed into the fæces; and, as the receptacle is a movable one, the scavengers are spared the necessity of entering the Ashpit. The courts and streets are also thus kept clean.

As Mr. Morrell has kindly given me a wood-cut and description of his patent I need not describe it here, and will only state my objections to it.

I do not think it will be found to work; firstly, because there will be far too much strain both on the door and on the whole frame of the cinder-sifter. Secondly: the receptacle for the cinders will sometimes be full to excess and sometimes quite empty.

If Mr. Morrell will give his attention and ability towards providing a better and simpler cinder-sifter, worked independently, or with less strain and friction, it will in a great measure remove my apprehensions. Mr. Morrell is very sanguine of the success of his invention, and I should like to see it tried.

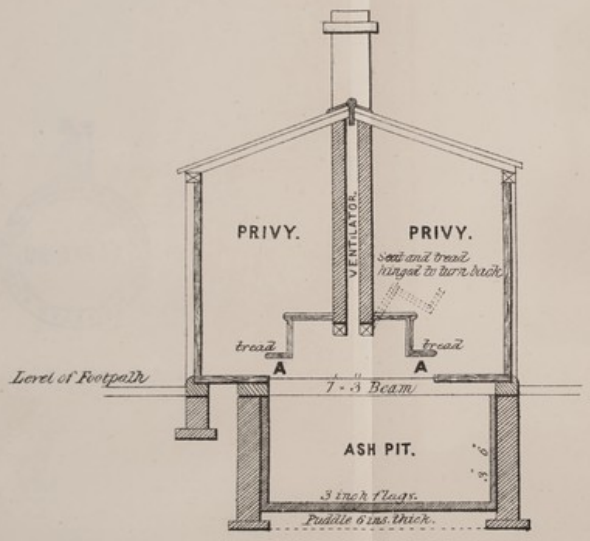
I again repeat, that were Mr. Beeche's and Mr. Morrell's plans thrown into one, a nearly perfect Ashpit would be produced.

# PLAN AND SECTION

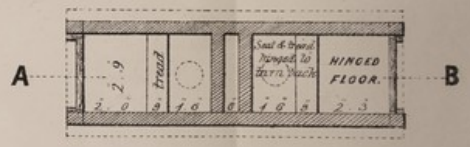
OF

## IMPROVED DRY PRIVY,

*Now being used in the Borough of Salford*




**SECTION ON LINE A.B.**

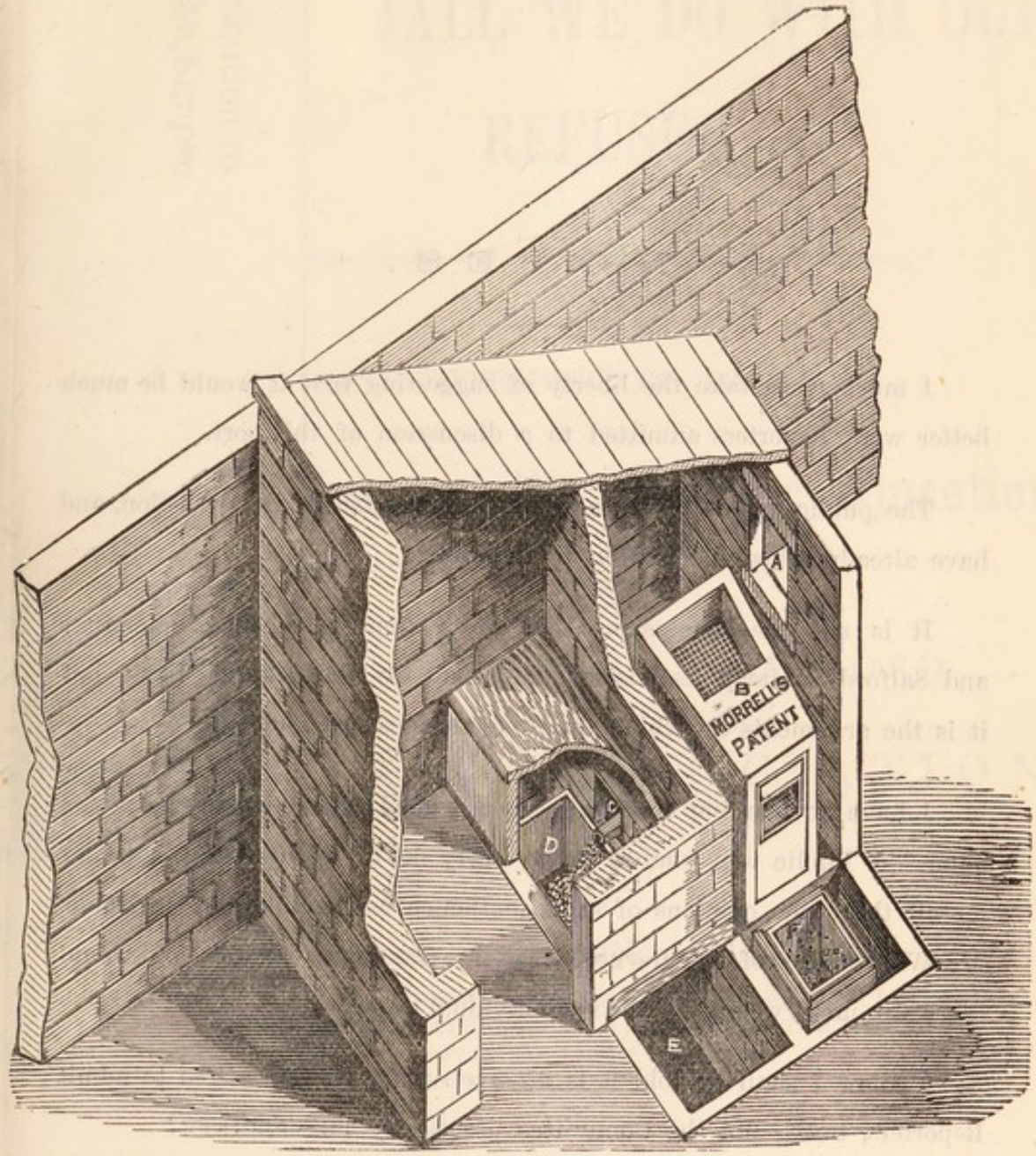



**PLAN.**

**NOTE-A** *is opening for to deposit Ashes.*

*Scale 4 feet to an inch.*

# MORRELL'S PATENT ASH-CLOSET.




A—Hole in back wall for putting cinders and ashes on to the screener. Bottom is not more than 3ft. above yard floor.

B—Screener, brought into agitation by opening of privy or any door. Mesh, ten to the square inch.

C—Pipe for conveying fine ashes to excrement box or pit. It is attached to the screener, and agitated with it.

D—Excrement and ash box, movable.

E—Hole in yard for removing excrement box, covered by a trap door.

F—Movable box for receiving the whole or a portion of screened cinders, through which all house liquids may be passed for purification, before being discharged into house drains or sewers. Receptacle for slops would be partially over or near it. By reversing the direction of the screen, this box may be put out of sight altogether. This plan provides for the prevention of anything but pure liquid entering the sewers from the dwelling, consequently prevents the pollution of the river. Its adoption would involve a loss of cinders to the householder, but these need only be the smaller ones.

NOTE.—The walls, roof, and privy seat are only partially shown. They have been broken to show internal detail.

# NOTES.

I must again take the liberty of suggesting that it would be much better were Reporters admitted to a discussion of this sort.

The public generally are now much interested in this question, and have already taken the matter up themselves.

It is not the conclusions that the Committee of the Manchester and Salford Sanitary Association may come to that interest them, but it is the arguments on which those conclusions are founded.

I have no fear but that when once a good scheme has been decided upon The Public will enable us to carry it to a successful issue. I myself think the opinions of such gentlemen as Dr. Simpson, Dr. Noble, Mr. Walworth, Professor Reynolds, &c., are far more valuable and would carry far more weight than any individual paper.

I know I shall be told it is *ultra vires* for a *Committee* to admit Reporters, but is not the Committee practically THE SOCIETY?

JAS. F. WILKINSON, Printer, Guttenberg Works, Albert Street, Ellor Street, Pendleton.