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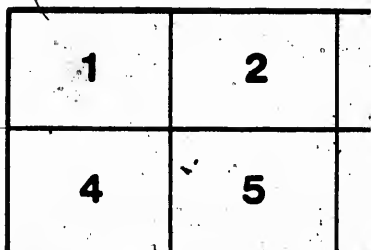
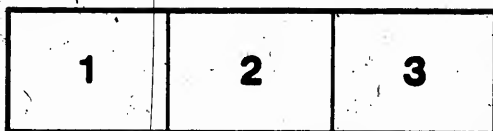
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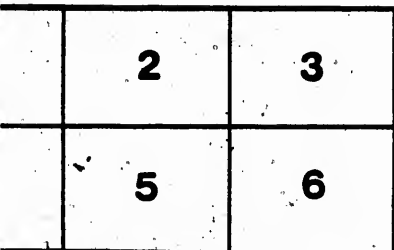
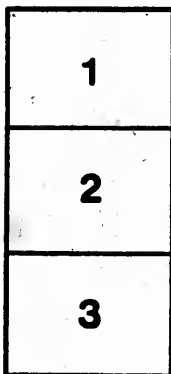
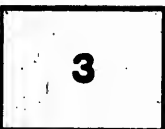
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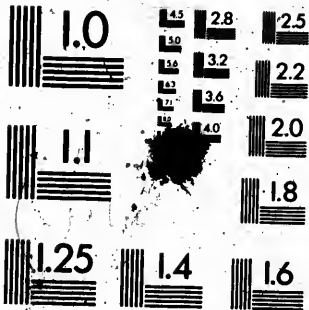
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REPORT  
OF A  
MEETING OF THE  
MONTREAL NATURAL HISTORY SOCIETY.

IMPORTANT HEALTH MATTERS.  
DR. BAKER EDWARDS ON THE DISPOSAL  
OF NIGHT-SOIL.

CREMATION RECOMMENDED  
AND  
CHARCOAL CLOSETS FOR DWELLINGS.  
DISCUSSION THEREON AND EDITORIAL  
REMARKS.

RE-PRINTED FROM THE "MONTREAL HERALD" OF FEBRUARY 3rd,  
1885.

WITH COMPLIMENTS OF  
HEAP'S PATENT DRY EARTH OR ASHES CLOSET CO. (LIMITED),  
57 ADELAIDE STREET WEST,  
TORONTO, ONT.

62-6-95

# "HEAP'S PATENT" INODOROUS DRY EARTH OR ASHES CLOSETS AND COMMODES.

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Rainhill.  
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Crighton Institution, Dumfries.  
Cheadle, near Manchester.  
Bakewell.

## AT A MEETING

—OF THE—

## NATURAL HISTORY SOCIETY OF MONTREAL

HELD FEBRUARY 2, 1885,

THE PRESIDENT DR. T. STERRY HUNT, F.R.S., F.R.C.S., IN THE CHAIR;

THE FOLLOWING PAPER WAS READ BY

DR. J. BAKER EDWARDS, F.C.S.,

PUBLIC ANALYST FOR THE MONTREAL DISTRICT OF INLAND REVENUE.

MR. CHAIRMAN AND GENTLEMEN,—I find on referring to the fifth annual report of the Montreal Sanitary Association, presented in this room in April, 1871, an able review by our late lamented friend, Dr. Philip P. Carpenter (the honorary secretary), not only of the previous year's work, but also a sketch of the labors of that association during the previous five years of its existence, and of the establishment of a Builders' Sanitary Association during that year, 1871, and an appendix by Dr. Carpenter, consisting of "Practical Suggestions on the Ventilation and Drainage of Canadian Dwellings," of a highly valuable character. Many of us can, no doubt, remember the animated discussions which took place at some of those meetings, and I think we may hope that they were not in vain, but have borne fruit in both public and private building improvements.

We have, however, by no means arrived at such a cleanly and wholesome condition of our city as to bid defiance to the dread approach of Cholera, nor can we say that in consequence of our sanitary improvements we have driven Diphtheria, Typhoid, and Scarlet Fever out of our city; and the present is a favorable occasion, when fresh contracts

for scavenging and night-soil removal are called for, to consider what system can be adopted during the next five years by which a more sanitary and cleanly condition of the city may be maintained.

## RADICAL CHANGE PROPOSED.

Having been consulted by the Health sub-committee on this subject I have, after due consideration, strongly recommended the cremation and carbonization of the night-soil, and the gradual abolition of all cess-pits and privy vaults within the city, and the substitution of dry closets and frequent removal, known as the "pail" or "tub system." I believe it to be practically both the best and cheapest yet devised, whether "Dry Earth," ashes, or charcoal be used as the absorbent, and that the only practical objection to them which has hitherto existed is removed in the *Heap's patent closet*, in which the fluid is separated from the solid excreta.

## THE VALUE OF THE EARTH CLOSETS.

These are claimed by the inventor to be the "best in the world," having taken thirteen prize medals in open competition with Morrell's, Moule's and other celebrated makers, amongst others, at the Sanitary Exhibition at Glasgow in 1883, at the International Exhibition, Amsterdam, in 1883, and at the Health Exhibition, Dublin, 1884, and they are here on exhibition this evening to speak for themselves. To my mind the only possible im-



provement to make them perfect would be the substitution of prepared charcoal for dry earth or ashes, for, as Dr. Parkes says, "3 oz. of charcoal is equal to 1½ lbs. of earth," and is more powerful as an "absorbent and deodorizer than either earth or ashes." All that is now required is that the community at large appreciate the comfort and advantage of the system, and act in concert with the local authorities in accepting generally these conveniences in lieu of the

#### ABOMINABLE "CESSPIT."

Dr. Carpenter says, in the pamphlet to which I have referred, Article 23: "It can scarcely be doubted that the earth closet is the best mode for collecting and disinfecting *excreta*, providing arrangements for its removal can be satisfactorily made." Dr. Parkes, a high sanitary authority, says in his "Manual of Hygiene," "In Glasgow the *excreta* from one part of the town, containing 80,000 people, are now removed every day and sent long distances at a profit. There is no better deodorizer than charcoal, 3 oz. of which is equal to 1½ lbs. of dry earth. Experience only can show whether it be commercially successful, but there can be no question that it is an excellent plan in a sanitary point of view." Dr. A. Winter Blyth says, in his "Dictionary of Hygiene":—"As compared with the 'water closet the dry closet system has these advantages: it is cheaper in its original cost, it requires less repair, it is not injured by frost, and it very greatly reduces the quantity of water required by each householder." In England the Board of Health may adopt dry closets, may dispense with a supply of water for the latter purpose, and undertake by themselves or by a contractor to supply dry earth, charcoal, or any other deodorizing substance to houses within their district for the regular supply of dry closets, also may provide and maintain, in suitable places, public earth closets." Dr. N. Radcliffe, Inspector to the Local Government Board, reports as follows:—"In Manchester (Eng.) there are 6,000 ash closets already in use; these are provided with a cinder sifter so that the ashes are sprinkled into the receptacle and the cinders thrown out, so that they can be returned. This is great economy and much appreciated by small householders. Tenants are willing to give three shillings more rent weekly for premises thus reconstructed. The removal is made

"once a week by the town authorities. It is entirely inoffensive. It is found that a class of the population, commonly believed to be indifferent to such niceties, have rapidly appreciated the advantages of the new closets and taken to the use of the cinder-sifter." Of Rochdale the same inspector reports:—"The pail system has been thoroughly approved by all who have experience of it, and has proved equally efficacious in private houses, lodging houses, factories and workshops. The cost of removal which, under the old system, amounted to \$355 per 1,000 persons per annum, is reduced to \$95 per 1,000, and the value as manure equals three-fourths of the latter sum, so that a large economy is hereby effected."

#### WHAT THE SCIENTISTS ELSEWHERE SAY.

Moreover, the same general conclusions have been reached by the highest authorities in the United States, the following preamble and resolutions having been published by the State Board of Health, N. Y., in 1881:—"Whereas many cases of disease arise from contamination of water and earth by the soakage from privies and cesspools, and disease from this cause will increase unless action is taken to avert the evil." Be it resolved, "1st. That the use of privy vaults, pits and cesspools, is seriously affecting public health, and should be abolished; 2nd, That all excreta should be removed from the neighborhood of human dwellings; 3rd, That this should be done by the local authorities; 4th, That it may be cheaply and healthfully done, either by 'dry removal' or by 'water carriage' and in the latter case the 'separate system of sewers' is hereby recommended for general use in this State."

Dr. Jas. T. Gardiner, director of the New York State survey, in his report to the State Board of Health, says:—"The awful lessons taught by epidemic diseases are awakening the towns of the State to the need of relief from the prevailing privy vault and cesspool nuisances. I find that wherever intelligent efforts have been made to produce sanitary conditions for towns, cesspools and vaults are abolished, and the sewage is removed from the neighborhood of dwellings by 'dry removal' or by 'water carriage.' The 'tub,' 'cask' or 'pail' system, used even on a large scale in England, France and Germany, is undoubtedly the best method of removal, where the water system is not available. In Rochdale and Manchester

the higher class of houses are allowed to have water closets, but four-fifths of the people are obliged to have 'pail closets' in their yards, built according to the plan of the health department. For towns having no general sewage system I would unhesitatingly advise the use of the 'pail' or 'tub' system as practised in England, as being, from a sanitary point of view, an immense improvement upon the death-breeding privy vaults in common use. At a small cost the existing vaults can be cleaned and filled and the privies altered into healthful tub-closets. Being convinced that this system is the most immediately practicable remedy, I recommend to this Board to take measures to secure its adoption. In Rochdale and Manchester they have been obliged to build sewers for slop, waste and storm-water, to supplement this 'tub system.' Dr. Gardiner further says that in discussing this matter at the British Association meeting in York he found sanitary engineers and medical inspectors "condemning the combined system of water and closet sewage, and many medical men favoring the general introduction of the dry removal in tubs, limiting the use of sewers to carry off only waste and storm water."

Dr. Bell, of Brooklyn, N.Y., at the sanitary convention of the State Boards of Health at Baltimore, while advocating the "West" pneumatic system of removal, as the best and most perfect system, says: "Safety in the use of the dry earth system essentially consists in the same practice as the 'West' system, the prompt disposal of the material (earth or charcoal) which retains the excreta before putrefaction takes place."

Col. J. M. Keating, in a valuable article published in the 8th volume of the American Public Health Association "On the Cremation of Excreta and Household Refuse," says: "The disposal of excreta is the sanitary problem of the age; whether in towns, villages, cities or farms, the privy and midden system are utterly objectionable. The sewer system is only less objectionable than that of the privy. Out of the difficulties which environ our present method of sanitation there is but one safe way, and that is by fire. Even 'poudrette' is dangerous, from its liability to ferment and to occasion typhoid fever among persons handling it or engaged in the navigation of vessels carrying it as merchandise. In Manchester, Leeds and Birmingham the excreta are col-

lected in pails, are reduced one-twelfth in bulk by a 'concretor,' and a valuable manure is obtained either as 'poudrette' or mixed with charcoal [which is safer], but there is no real safety, save by cremation."

In the second annual report of the Provincial Board of Health of Ontario, several valuable papers are published on this subject, and illustrations given of the closets used on the Rochdale and Manchester systems, but the charcoal system, which is an improvement on either, and better adapted for this climate, seems to have been overlooked;—general assent of medical Canadian authorities is, however, expressed in favor of "dry removal" where applicable.

#### WHY THE SYSTEM IS SO LITTLE USED IN THIS PROVINCE.

With a large amount of medical and sanitary testimony in favor of dry removal without accumulation, it is somewhat surprising that the system has made so little progress in this Province, but the secret probably lies in the trouble or expense of obtaining a plentiful supply of the absorbent dry earth or ash, and hence the especial value, in my judgment, of

#### THE GLASGOW PLAN

of distillation of the night-soil at a high temperature in close cylinders or iron retorts, by which process the germs of disease are effectually destroyed, the products condensed in close vessels and utilized either as ammoniacal salts, fuel in the shape of gas and tar, and a disinfecting dry charcoal residue, the very best and cheapest deodorant and absorbent for the dry closets, the abundant and daily supply of which would soon pave the way for their general introduction, and in the meantime provide a valuable material for disinfecting and deodorizing cesspits, thus lessening their present evils and leading to their gradual abandonment.

The habitual use of this material and the improvement manifestly arising therefrom, will, I believe, when publicly known, be appreciated in this city as fully as it now is in those English towns where it has been adopted. The pail system of collection will soon follow an abundant supply of this deodorizer, and I trust (whatever system of cremation may be adopted) that the production of this valuable disinfectant will be made a prominent feature.

#### THE STREET GRIDS.

It would also be available for charcoal boxes to be placed above the open grid,

of street sewers and thus absorb the most dangerous of those foul emanations which meet us at every turn of our sidewalks and are frequently the source of disease.

The evils of the present sewage system are apparent in our public schools, where young children have no protection from the severe climate, in our hospitals, asylums and jails, and in many of our factories and tenement blocks, where the dry system of removal would be of immediate public benefit; and the sprinkled charcoal a much needed deodorant. (Any one who has occasion to visit the Court House or City Hall must be conscious of the pestiferous atmosphere, and that the causes are of the most disgusting character.)

#### WATER SEWAGE SYSTEM.

With respect to the system of removal by water, it is generally conceded by sanitary engineers and medical authorities that the difficulties of extending this to cottage houses or tenements are *insuperable*, and that the connection of even good water closets with the common sewer is dangerous and uncertain to the occupiers of houses, and that the separate system, dividing the closet refuse from the roof water, slops and sink washings, is a most desirable improvement on the present imperfect sewage system.

As to the final disposal of such water sewage, however, Sanitarians have not yet exhibited the same unanimity as they have on, the system of dry removal and frequent removal, wherever practicable.

#### THE CREMATORY.

A large fire-brick furnace, called the "Beehive Destructor," has, I see, been invented by Mr. Stafford, Borough Engineer of Burnley, in Lancashire, which is of great power, destroying twenty to twenty-four tons per day of garbage and offal of every description. Such a furnace would be invaluable for the cremation of the scavenging and offal material, but for nightsoil alone I should prefer the *gas works principle of construction and the storage of the gas in a holder*, and I believe the profit on the products would fully pay the extra expense of condensation.

It would be of the greatest benefit to the city to have one of each such furnaces constructed and thus to cremate all garbage and offensive materials, both animal and vegetable.

Mr. Eawie, C.E., in a report to the Sanitary Institute of Great Britain, meeting at Dublin last year, says:—

"The system of destruction of house refuse by burning was reported upon by Dr. Sanders in 1851. It has been more or less fully adopted by the City Commissioners of Sewers, by Leeds, Bradford, Warrington, Manchester, etc., etc. In this process a 'Destructor' burns everything combustible in house and trade refuse, and a second apparatus called the 'Carbonizer,' converts the organic matter, animal and vegetable, into charcoal. \* \* \* After due investigation, I think it will be taken for granted that the burning of refuse is the most satisfactory system extant."

#### RECOMMENDATION.

On the above grounds I have strongly recommended the system of "cremation," "carbonization" and "dry pail removal" to the Council of the City of Montreal.

#### DISCUSSION.

The reading of the paper was followed by a rather warm and interesting discussion on the comparative merits of the dry earth and water carriage systems, the manner in which the Board of Health performs its duties, the propagation of disease by night-soil and the best mode of the disposal of sewage, in which Mr. Boxer, Alderman Mooney, the Rev. Robt. Campbell, Dr. LaRocque, Mr. Radford, Col. Crawford, Mr. Clendinneng and Dr. Wanless took part. All the speakers looked upon the question as one of great importance and the majority of them were of opinion that to burn the nightsoil was the most effective mode of disposing of it. An idea of the condition of the city may be obtained from a statement made by Dr. LaRocque, which was that there are ten thousand cess-pits in the city, only fifteen hundred of which are emptied in the course of a year. It was said that the law which does not permit the Board of Health to compel the householder to empty a pit, no matter how large or how deep it may be, until it is filled to within a foot of the surface, prevents that body from applying a remedy to this dreadful state of things. Mr. Radford, Sanitary Inspector, said that the people of Montreal were ignorant and asleep with regard to all matters relating to the public health. All agreed that the sanitary condition of the city is bad and needs to be improved without delay. If the cholera visits the city in the spring, and it remains in its present condition, the general opinion was that the worst effects would fol-

low. Mr. Clendinning expressed in forcible terms his conviction that public opinion would support any well-conceived plan to preserve the health of the city, and advised the Board of Health to take strong ground with respect to the disposal of feculent matter, and leave the responsibility of rejecting a good system on the shoulders of those with whom the people would have to deal.

REPLY.

Dr. J. Baker Edwards, in his reply, said it was not his object to supersede the system of water carriage or to supplant it by the dry earth or any other system. He wanted simply to find means of removing and destroying the filth of the city, and finally to abolish cess-pits and privies altogether. There was work enough in cleaning out and disinfecting the 8,500 cess-pits in the city that had not been emptied since they were first dug out, for a greater number of officials and workmen than would be likely to be employed for the next twelve months. The offensive matter existed, and was doing injury, and what was to be done with it? One suburban municipality after another had refused to allow it to be dumped within its bounds and it could not be left festering and breeding disease where it is. To burn it would be to deprive it of its power to do harm, and the products produced by cremation would be useful in many ways.

In reply to the President, he said that the charcoal would increase in value each time it was burned, and become so vivified as to have all the qualities of "bone char"—so largely used in sugar refineries as an agent of discolorizing and deodorizing. It would be useful in horticulture and much valued by florists, and would doubtless become an article in popular demand. It could scarcely be produced in too large quantities; but if the supply exceeded the demand, it could be converted into a superphosphate fertilizer. If the pail system were adopted, there would be a large demand both in the city and suburbs, but it must be supplied at a cheap and almost nominal charge; say 25 cents per flour barrel, charcoal closets would then become popular. He had seen the system at work in Leeds, Bradford and Glasgow with the most beneficial results. His thanks were tendered to "Heap's Patent Closet Co" of Owen Sound, Ont., and to Mr. John Date of this city, for the excellent samples of earth closets now exhibited.

EDITORIAL REMARKS "MONTREAL HERALD."

A PROPOSITION IN THE INTEREST OF PUBLIC HEALTH.

The lecture delivered by Dr. Edwards last night in the lecture room of the Natural History Museum, which the reader will find entire on another page, is on a subject of the utmost importance to every man, woman and child in this city. Pure air is one of the first essentials of health. No one can continue breathing impure air for any length of time with impunity. But the air that is continually entering the system of every one is easily polluted, and such polluted air, instead of purifying the blood and giving vigor to the whole body, is the vehicle by which the germs of the most deadly diseases are conveyed to its most delicate and susceptible points. There is nothing that pollutes the air so quickly and with such injurious effects as human excreta. Nature has wisely and mercifully made all such matter offensive to the senses. She invariably gives due warning to all, and they are most unwise and their own worst enemies, who do not profit by that warning. Wherever there is an offensive odor there is danger, and it is the duty of every one to have the cause of it removed as quickly and as effectively as possible. In cities, or where large numbers are collected in a limited space, the removal and destruction, or rather transformation, of disease-breeding excreta is a work of some difficulty and expense, and to do it effectually the aid of science must be called in. Our readers need not be told that this work is not well done in Montreal. The vile smells which pervade some localities in the summer months, the prevalence of typhoid fever, diphtheria, scarlatina and other malarial diseases, prove that the means of keeping this city clean are dreadfully inefficient. If our fellow-citizens could realize how many are killed in Montreal every year by the poisoned air generated in accumu-

lations of filth of one kind and another, they would be appalled. The man who is killed by the bludgeon, the knife or the revolver of the assassin, presents a terrible sight; the spectator shrinks and shudders when he sees the wounds which the deadly weapons have made, but the victims of poisoned air show no wounds—they are often beautiful in death. The poison has worked slowly and insidiously, and what is really a murder caused by carelessness, apathy and ignorance, is lamented over as a mysterious visitation of Providence. Every citizen of Montreal should remember that bad air, poisoned by dirt that should never have been allowed to accumulate, kills more surely and a thousand times more frequently than the knife or the bullet. This slaughter of the innocents is always going on, but it is only when some dreadful disease, such as the cholera, visits a city that men generally attribute it to its true cause, and attempt, when perhaps it is too late, to apply the proper remedy.

The information which Dr. Edwards gives regarding the proper mode of disposing of the filth of the city cannot be diffused too widely or valued too highly. His plan is to give the *excreta* the least offensive form possible,—to remove it frequently, and to give it a form which is not only innocuous but an aid in promoting cleanliness and preserving health. He would have the city adopt a system of earth closets, and he would have their contents burned before they had time to pollute the air. The chief product of the cremation, animal charcoal, is one of the most effective of deodorizers and disinfectants. It is for this purpose that it is to be used under the system advocated by Dr. Edwards and other eminent physicians and scientists. The experience of other cities and the judgment of authorities assure us that if this system were in operation in Montreal the atmosphere surrounding it would be as pure and exhilarating as that of a country district. The effects of the purification would be perceptible immediately in the improvement of the general health and in the diminution of infant mortality. Added to these great benefits would be the increased pleasure of existence which all its inhabitants would feel from breathing air uncontaminated by foul exhalations.

But this reform cannot be brought about without the active co-operation of all intelligent and public-spirited citizens. A healthy public opinion on all sanitary matters must be cultivated, so that people of all classes may see the necessity of using the best means of preserving health and preventing the spread of disease. This is a matter in which co-operation is a necessity. It is everybody's business that everybody else should keep his premises clean. It little avails A to use every precaution to have all the arrangements of his dwelling and grounds in a good sanitary condition if his neighbors B and C are neglectful of theirs, or if there are parts of the city through which they must pass or building in which they must spend part of their time and in which they, with every breath they draw, must inhale the germs of disease. This is why the aid of the law must be invoked, and those who will not do what is right and reasonable of their own accord, and for their own interests, must be made to do it for the common good.

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#### EXTRACT FROM A LECTURE ON "SEWERS AND SEWAGE"

Delivered by ALAN McDougall, Esq., C.E.,  
before

#### THE SANITARY ASSOCIATION OF TORONTO.

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"The dry earth system was the oldest sanitary system which we could trace. The disposition of the sewage of towns and cities could be treated under two heads. 1. The dry sewage system. 2. The water carriage system. Most of our country towns were worked under the first system—in Toronto to an alarmingly prejudicial degree. The numerous privies and outhouses were a most fruitful source of disease. After a time the soakage would extend to an area sufficiently large to reach the wells in ordinary town lots. These outhouses, privies, cesspits, are in proximity to dwelling houses, bedrooms, living rooms and the wells of drinking water. This was the most disgusting arrangement possible. The material while being removed was a perfect nuisance. The *Dry Earth System of Closets* was, on the other hand, the best system of dry sewage, and if properly carried out would not endanger the public health. He referred to and described under this head the ash closets and 'pail system' of Manchester and Rochdale, England and then produced a working model of

#### "HEAP'S PATENT" DRY EARTH CLOSETS,

as erected on the Exhibition Grounds last September by Mr. Wm. Heap, of Owen Sound. He had inspected these closets when in use\* and found them to answer admirably, and he understood that a number were now in use in Toronto.

\*Four of our closets were erected, and 1,128 visitors made use of them.

