On the drainage of London and other large cities / by John McCosh.

ON THE DRAINAGE

OF

LONDON

AND

OTHER LARGE CITIES

Aide-toi et Dieu t'aidera

BY

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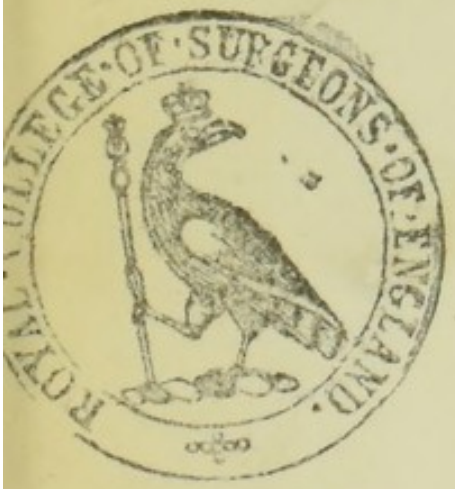

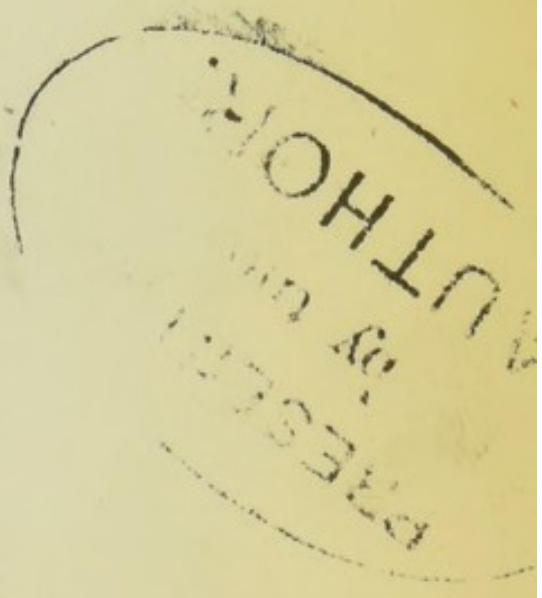

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MARIANO RICCI
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1874

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THE RIGHT HONORABLE

THE PRESIDENT

OF THE

GOVERNEMENT LOCAL BOARD

BY THE AUTHOR

JOHN Mc. COSH

Hotel de Russie Florence
1 december 1874.

ON THE DRAINAGE OF CITIES

A great deal of correspondence has lately appeared in the public Press respecting the defects of Town drainage, more especially about the noxious gasses that escape from them, and their prejudicial influence upon the health of the inhabitants: but not one satisfactory theory has been proposed calculated to remedy the evil.

Having in my official capacity, both in India and at home, paid much attention to sanitary affairs, I have been induced to put my opinions on paper, and propose a cure that I hope will go far to mitigate the mischief, if it does not altogether prevent it.

After all that has been said and done about the Main-drainage of London, it appears to have accomplished only one half that was expected from it. London has got rid of the fluid contents of its drains and run its sewage off to a safe distance, into salt-water; but the injurious gasses remain behind, and escape into the public streets through the numerons gratings unavoidably left open, through the numerous hatchways often opened on purpose to relieve the pressure of gas within the drains, and through innumerable domestic sinks, cesspools and waterclosets, into

the houses of the inhabitants, unquestionably the cause of much sickness and mortality. The most feasible, in fact the only remedy proposed is disinfection: but till the chymist is able to analize a cubic foot of drainage gas, and prove that it contains, or does not contain the germs of Typhus, Scarlet or Intermittent Fever, of Smallpox Measles or Cholera, disinfectants thrown into drains must be as delusive, as throwing a harpoon into a lake in hopes of killing some particular fish. That these germs are all as different as Oxygen, Hydrogen and Nitrogen (the constituent parts of the atmosphere) we are justified in concluding but that any disinfectant such as Chlorine, (the one in general use) can neutralise them all, our knowledge of aerial Chymistry will not allow. Even men of science are obliged to confess that they know not what may be the ultimate elements of disease, whether ethereal as a perfume, impalpable as motes in the sun, or imponderable as caloric or electricity, whether impregnating the system through the skin like the pollen of a flower; through the lungs, along with the air we breathe like intoxicating gas: or through the stomach along with the food we eat, like a poison. All that they are assured of is that these first principles exist in sewage and in sewage gas, which for want of a better name they call Malaria or Miasma. The obvious prophylactic is therefore to remove both the one and the other to a safe distance as soon as possible.

It may be taken for granted, that on all ordinary occasions the sewage of the London Maindrains never occupies more than one half of the tunnel, and that the upper part is open continuously from one end to the other. It is probable that after a heavy fall of rain the drains might be filled with water and for a few hours prevent the out

flow of gas; but on such occasions little gas would be generated and in summer when the drains are foulest they are most patent. We are aware that a powerful pumping Engine is constantly at work, somewhere near Blackwall, to accelerate the current of the sewage, andraise it from the Low to the High Level; but strange to say, no corresponding Engine has been thought of to accelerate the current of the foul air, which rests stagnant in the drains, like coal gas in a gasometer, ready day and night to escape into the open air by any aperture open to its issue.

To accomplish this great object I propose that a pneumatic or ventilating Machine be placed in connexion with the Low Level drain, as far removed from the Metropolis as possible, to blow out the deleterious gasses and produce an aerial current throughout the whole drainage system corresponding with the sewage current. By adopting this scheme every opening in the drains instead of being an out-let for noxious effluvia, would be an-inlet for atmospheric air, and conduce immensely to the better health of the whole City.

I am quite aware of the serious objections that would be made to discharging such a volume of offensive gas upon a populous neighbourhood; but it could be discharged without inconvenience by a lofty chimney such as is used in chymical Works. It might even be practicable to establish an air tight passage between the Low and the High Level, and have the pneumatic Engine erected at the outlet of the sewage in Barking Creek, a very desirable object to keep in view. Several of such ventilating chimneys as auxiliaries might be built throughout London with or without machinery, with great advantage, and they might be made ornamental as well as useful.

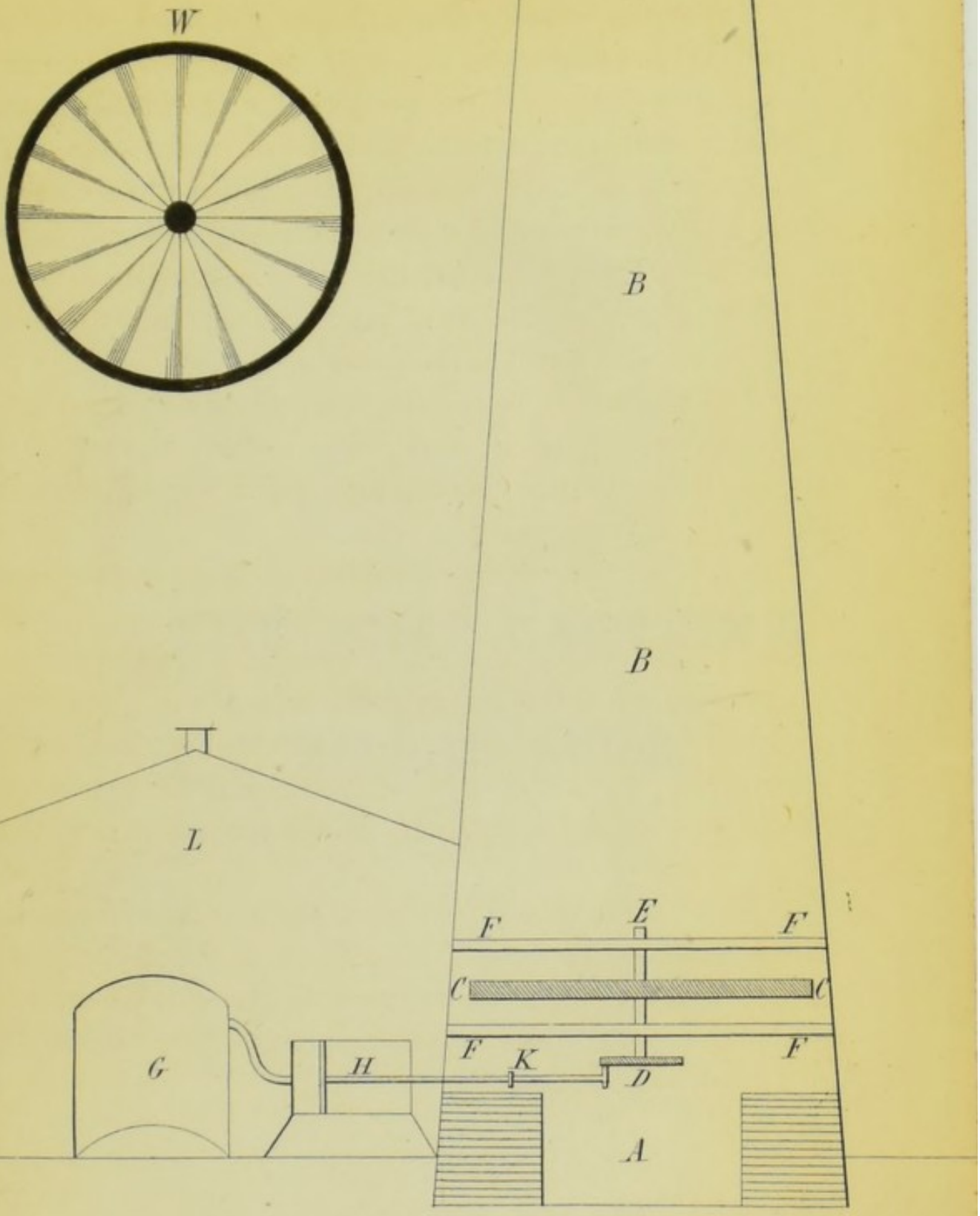
I therefore propose that a Chimney of brick work three hundred feet high, and six, eight or ten feet in diameter at the base be built over an opening in the Main drain, that a ventilating wheel one foot less in diameter be placed at the bottom of the shaft, in a horizontal position, to be put into rapid rotation by a steam engine working horizontally outside the shaft through a stuffing-box to blow the gaseous contents of the main-drainage into the clouds, or beyond the reach of doing harm.

But the accompanying diagram, though laid down not strictly according to scale, will explain the whole apparatus better than words alone. It is a Vertical section of the whole Apparatus.

After all, this mode of ventilation is only the reverse of what may be seen in Blast-furnaces and in London Clubs; the wheel is placed horizontally instead of vertically and its action is to blow foul air out, instead of fresh air in. It is simple in the extreme; an Engine of only 20 or 30 horse power would suffice; two men would be enough to attend it; and the annual cost would be inconsiderable.

I feel assured that one such Machine would keep the whole main drainage of London or any other City free from foul air; would be an immense saving in sickness and mortality to the entire population; and in fact would be a great public Boon.

FINIS.



a Represents the Main drain
b The Chimney of brick work
c The Fan Wheel of iron
d The crank Wheel and Pivot
e The Axle of steel resting in
f Cross iron bars built in Wall

G The Boiler in situ
H The Cylinder and Piston, attached to D
K The usual joint
L The House for the Engine
W The Fan Wheel of Cast iron the fans to be at an angle of 45° with the plane of the Wheel

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