SCIENCE

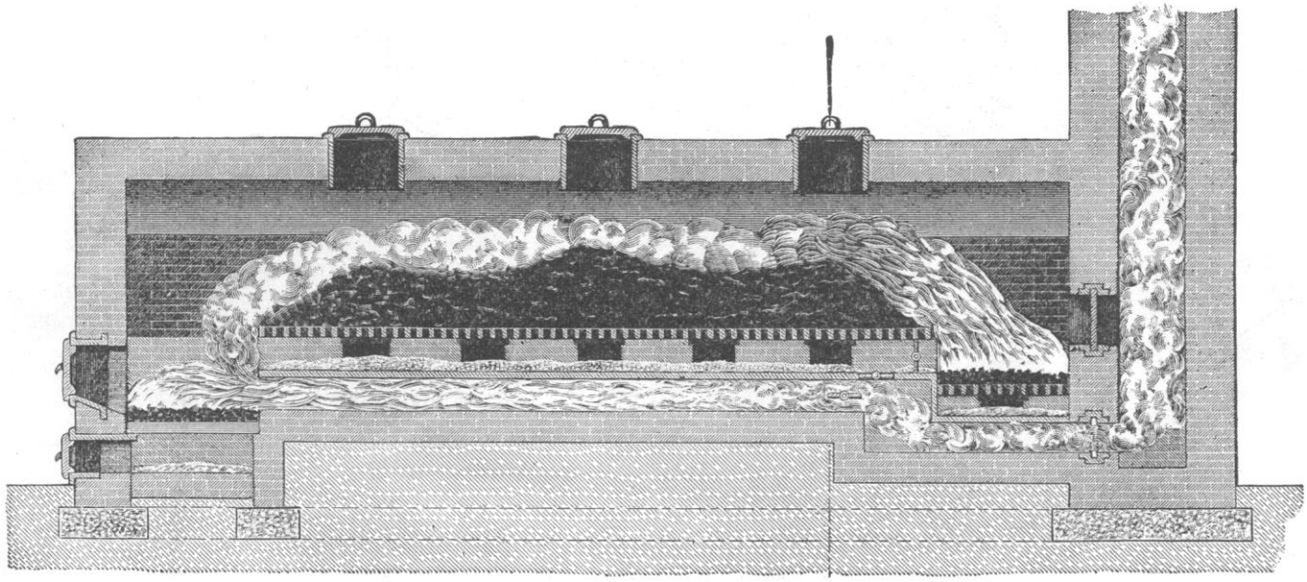
FRIDAY, DECEMBER 7, 1888.

GARBAGE-CREMATION.

IF we may judge from the discussions of the American Public Health Association for the past two years at its annual meetings, the most important practical sanitary problem of the time is how to dispose of the garbage and night-soil of populous communities. For cities situated on the seaboard this question is not such a pressing one, as the refuse can be transported by water sufficiently far from the shore, and deposited in the ocean. If it returns on the incoming tide, and is cast on the beach, this may in the future be avoided by carrying it still farther. But to inland towns and cities no such method is available. For years many of these have cast heir waste into the river, if such ran near them, or to a general dumping-place near by, and were content to know that they at least were relieved of the burden, caring little that their sister cities, situated farther down the river, were injuriously affected. Not until a direct detriment either to a city's health or financial prosperity can be traced to such methods, is there a disposition to invoke the aid of sanitary science and the ingenuity of the inventor. The rapid growth of interior towns in the United States has made some radical method of the disposition of such material an absolute necessity, and, by the common consent of all sanitarians, no method offers such advantages as its destruction by cremation.

Of the many devices which have been invented for the conversion of noxious waste into a harmless residue through the instrumentality of fire, none seems to have more effectually accomplished the object than the Engle cremator. The principle involved in the invention resides in the use of two fires at the opposite ends or sides of the garbage or other substances to be burned; and in managing the fires so that one of them operates to volatilize the liquid constituents of the substances, while the other operates to burn the steam and other gases which arise from the volatilization; and then in so managing the fires as to complete the process of burning the dry residuum, or reducing it to a fertilizer, if so desired. The economy of the process, aside from the simplicity and low cost of the furnaces, lies in the fact that comparatively little coal or other fuel is required to start the two fires. The gases and other products from the substances being cremated complete the process of burning, the substance thus in great part supplying the fuel for its own destruction.

The following description and cut of the garbage-furnace which was erected at Des Moines, Io., will make clear the method by which Mr. Engle adapts this principle to practice. The cut presents a vertical longitudinal section of the furnace, showing its forward end toward the left. The upper door shown in the left-hand end opens into the fireplace, and the door immediately below opens into the ash-pit thereunder. The five larger openings shown on the side of the furnace midway of its length open into the ash-pit under the grate, which supports the garbage and other wet and offensive substances which are being burned. Five smaller doors above open into the garbage fireplace in order to give easy access thereto, in case it becomes expedient to stir or otherwise move the garbage in the fireplace while it is being consumed. There are also openings into the rear fireplace, and into the pit under it. Three angular valve-handles operate the three valves which appear in the figure to the left of the rear fireplace. The two valves which appear in the figure give egress into the chimney from the first fireplace and the second fireplace respectively. The three covers on the top of the furnace close the downward openings in the top of the furnace, through which the matter may be dumped upon the grate.



VERTICAL LONGITUDINAL SECTION OF THE DES MOINES GARBAGE-FURNACE.

The mode of operation is as follows: The garbage and matter to be consumed are dumped upon the garbage-grate, and a fire of coal is made in each of the two fireplaces at the respective ends of the furnace. The flames from the rear fireplace pass over the garbage, driving before them the steam and other gases arising therefrom into the flames above the forward fireplace, where the flames from the two furnaces meet and mingle. As those mingled flames pass backward toward the chimney, they intensely heat the iron floor of the garbage ash-pit, and that floor conducts heat upward toward the garbage above it, and thus aids in volatilizing the liquid constituents thereof. This operation continues until the substances on the garbage-grate are reduced to a dried condition, when the lower chimney-valve may be closed and the upper chimney-valve opened; and thereupon the flames will pass from the forward fireplace above the garbage-grate, and ignite the dried sub-

stances resting thereon, and drive the products of the resulting combustion into and through the flames above the rear fireplace.

Health Officer Thompson of Chicago visited Des Moines to inspect the working of the garbage-crematory there, and in his report says, "The cost of the operation is much less than at the Montreal furnace. The device is simple, but it is as effective as any I know of. It does not need skilled labor, and does not use much coal. Two men seemed to be able to do the work there that ten did in Montreal. This furnace was built by Mr. James Callanan, a wealthy Des Moines citizen, to demonstrate what could be done in the way of disposing of garbage quickly and completely without offensive smell, and it is attracting attention all over the country. . . . I think myself that the Des Moines one is the best, and it is much the cheapest, and I am in favor of putting up our first one upon that plan." He further says there were thrown into the furnace while he watched it two dead horses, seven dogs, eighteen barrels of garbage, three hods of manure, fifteen bushels of rotten eggs, and three barrels of rotten fish. This was all consumed in one hour, with no offensive smell from the combustion, and no smoke. The furnace was cold when started.

The Des Moines *Leader* thus speaks of the Engle cremator: "The especial advantage of this apparatus is that it may be located in any part of the city without any offence. It is the invention of Andrew Engle of Baxter, Io., who also invented the process of destroying the filth of closets in houses by fire, which process, when once in general use, will avoid the necessity of polluting streams and lakes with deadly sewerage. A furnace built for this purpose has been in use in the old Capitol building at Des Moines for the past three years. It has given complete satisfaction, and demonstrated its adaptability for hotels, public buildings, and private residences."

The Engle Company erected one of their crematories, twenty feet long, in September of this year, at West Brighton, Coney Island, and had it in use until the close of the season, giving such satisfaction to the town authorities as to induce their hearty recommendation of its merits as being economical, scientific in principle, and cleanly and efficient in its methods of disposing of the refuse, and seemed to them the best means for the treatment of such nuisances.

One of these furnaces has just been erected at Milwaukee, Wis., and was put into operation during the recent meeting of the American Public Health Association in that city, and inspected by many of the members.

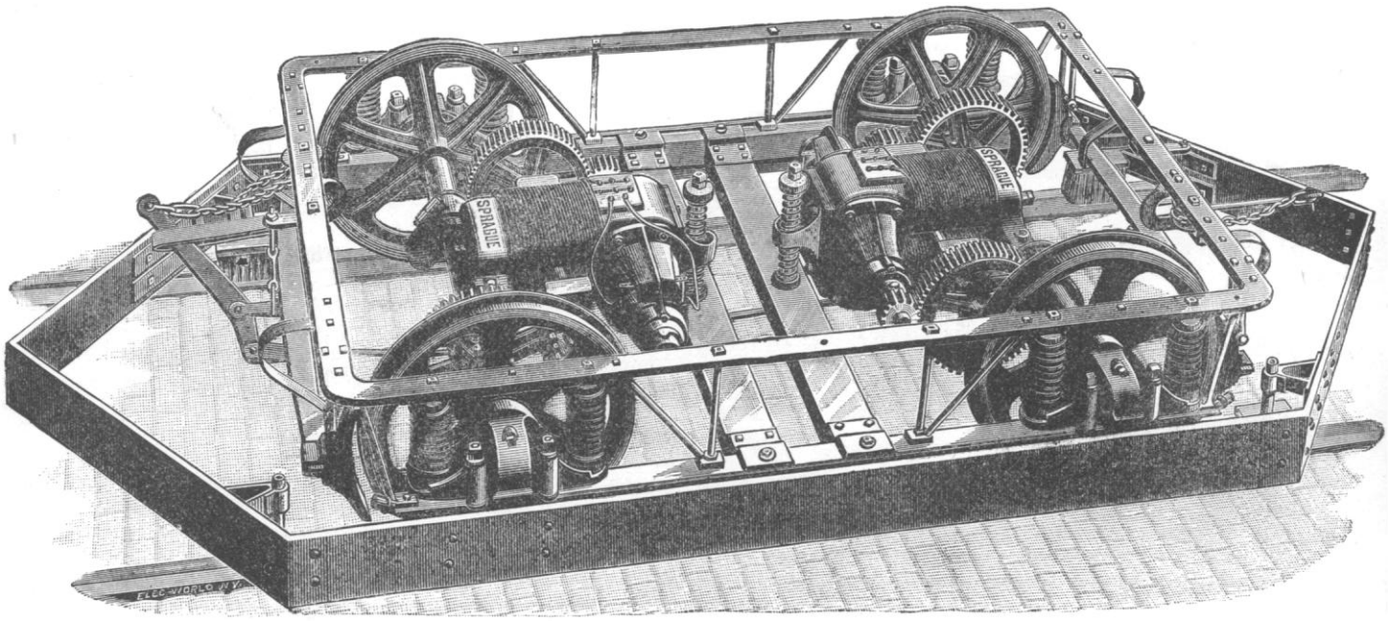
It is claimed for this furnace that it is not only applicable to large cities, but to almost every collection of human beings, even to a single family living in a private dwelling. The inventor says that its use is indicated in private dwellings in any locality in the country or city, but especially in all places where no system of waterworks is in operation, and also in villas and suburban places, where there may be a private water-system, but where drainage is into cesspools or small streams. The great majority of dwellings in the United States have neither water-closets, cesspools, nor drainage, and have none but the most cumbrous and inadequate method of coping with the great evil. The very low cost of the small furnaces brings it within the means of those who occupy the smallest class of houses, and its feasibility has been demonstrated for tenement-houses and for blocks of buildings in towns, as well as for detached houses.

For seaside or mountain resorts, where sanitary measures are more and more demanded by the public, this system affords the means of answering the demand, and will add to the popularity and desirability of such resorts by removing the great dread which city people have of typhoid and malarial poisoning. They can be placed in the basement or cellar, or in outhouses built for the purpose, wherever they can be connected with a chimney for draught and ventilation.

These furnaces are themselves the receptacle or vault, and no disinfectants or absorbents are needed, and no removal or handling. When fired, the valves are closed until the cremating process, lasting about an hour, is over. No skill beyond ordinary intelligence is required for the management of the fire or the apparatus.

For schoolhouses, large or small, it is believed this furnace will remove the greatest menace to the health of the children, and be a long step toward decency and comfort.

For factories or other establishments, and for military barracks; for railroad-stations, for camp-meeting or picnic grounds, and for all other collections of summer-houses; for county court-houses, jails, and other public institutions in city or country; for hospitals and prisons, — this system will be found to have advantages.



NEW SPRAGUE TRUCK FOR STREET-CARS.

THE NEW SPRAGUE ELECTRIC-MOTOR TRUCK.

We take pleasure in presenting our readers with a view of the new electric-motor truck, constructed by the Sprague Electric Railway and Motor Company of New York. This truck is the same that was exhibited by the Sprague Company at the last street-railway convention at Washington, and one which attracted such wide attention and admiration there.

This truck is complete in every detail, and carries two powerful 15-horse power motors of a new design, and of the finest workmanship. Every detail of mechanical and electrical construction