THE WAGNER REGULATOR.

THIS electric regulator, invented by Mr. Frank C. Wagner of Ann Arbor, Mich., consists essentially of a high-resistance wire stretched tightly between two supports, and carrying a weight at its middle. The actuating current passes through this wire, which is selected in such a manner as to heat thereby, thus allowing the weight to descend a fixed amount for each strength of current. The weight carries a bar adapted to make contact successively with a number of spring contact-pieces, which are in electrical connection with a number of resistance-coils so arranged as to shunt varying portions of current around the device requiring regulation.

The field for the application of this form of regulator is very wide. Up to the present time, it has been applied practically to only two cases. The first was to compensate for extreme variations of speed in an incandescent dynamo. The wire of the regulator was placed in series with an incandescent lamp fed from the main conductors. Any increase of voltage due to an increase of speed immediately increased the expansion of the wire, thus dropping the weight, and throwing additional resistance into the field-circuit of the dynamo. Before the application of the regulator, lamps were being burnt out continually by sudden increase of speed. This regulator, although very crudely made, has been in use for nearly a year, and with excellent results.

The second application is in connection with an electric meter, also invented by Mr. Wagner. This meter uses the heating action of the current for the actuating force, and in consequence the direct readings are proportional more nearly to the square of the current than to the current itself. The regulator is employed to shunt such portions of the entire current around the meter proper as will render its readings directly proportional to the current strength.

There are many other ways in which the regulator can be applied, especially in connection with alternating currents. Its extreme simplicity, and the very small amount of energy consumed, are greatly in its favor.

HEALTH MATTERS.

The Hughes Crematory.

THE city of Savannah, Ga., is soon to have a crematory for the destruction of garbage by fire. The model selected is that known as the Hughes Crematory, and is thus described by the *Savannah News*:—

The crematory will be about 30 feet long, and from 15 to 20 feet wide. The main body of the kiln or furnace is a vertical shaft built of brick. At its base will be two hydrocarbon-burners. Upper and lower triangular flues extend across the middle of the shaft, and also an upper and lower set of baffles or side-wings, which are connected by means of wall passages or flues. Underneath these is a shelf, forming a retort in which air may mix with the flames from the burners. Flues are provided for the return of the gases arising from the incineration to a smoke-stack at the side of the shaft. A hydrocarbon-burner is placed at the bottom of the shaft conveying the gases to the chimney, which deodorizes them before they pass out into the air. Perforated steam-pipes are located over the top drop-shelf of the shaft, connecting the burner with the boiler, so that the fluids may be carried off.

The operation of the crematory is simple. When the furnace is brought to the required degree of heat, a load of the material to be burned is emptied into the top of the shaft. It falls on the first drop-shelf. After a suitable period this shelf is dropped, and the mass of material is allowed to fall on the second shelf, and a second is dumped into the kiln. After another interval the second drop-grate is allowed to fall, and the material is thrown upon the baffles and flues below, whence the residuum finally drops down into the ash-pit at the bottom of the shaft. The capacity of the crematory will be 50 tons of garbage per day, and the cost of the process is from 18 to 20 cents per ton.

In Montreal it costs just $43,000 to destroy by fire a year's miscellaneous refuse, and $8,000 additional for the burning of its night-soil. The destruction of the latter costs 75 cents per ton, and of the former 25 cents per ton. In Minneapolis it is estimated that 15 to 20 cents per ton of refuse pays for the labor employed and the fuel used. Within five days recently the refuse cremated consisted of 33 horses, 59 hogs, 103 barrels of hotel and commission-house refuse, 12 loads of market offal, and 70 loads of manure. The aggregate weight was 200 tons, but the ashes deposited in the course of consumption weighed considerably less than 1,000 pounds. The total cost of labor and fuel for this five days' period was $38.25.

THE MORPHINE HABIT. — Erlenmeyer says that children born of women addicted to the morphine habit are practically morphine-eaters from birth. During the first few days of life, unless morphine is given to them, they are very apt to suffer collapse; and this condition may end in death, the child being too weak to withstand the violent symptoms, which are similar to those which follow the sudden withdrawal of the drug in adult opium-eaters.

SCHOOLROOM SPACE. — Mr. H. Courthope Bowen, whose opinions on all matters connected with the proper construction of schoolrooms are entitled to great weight, and are regarded as authority by the leading medical journal of England, expresses somewhat as follows what, in his judgment, should be considered a good schoolroom. Taking the case of a room 14 feet high, fairly ventilated and always well aired in recess, he would assign two thirds of the floor-space to the scholars and their desks, and keep the other third for the teacher, the blackboard, etc. With single desks, 22 inches should be allowed from side to side, and 3 feet from back to front, for each scholar. The passages need not be more than 18 inches for those running from back to front, and 1 foot for those running from side to side. In such arrangement, counting the passages, each scholar has (without reckoning the share of the space allotted to the teacher) a trifle more than 40 inches from side to side, and just 4 feet from back to front. In a room 25 feet by 20 feet the floor-space for scholars' desks will be 16 feet by 20 feet, with 4 feet from back to front per row, and accommodation is provided for twenty scholars. The whole floor-space is 500 square feet, and the cubic contents of the room 7,000 cubic feet, with 20 square feet and 280 cubic feet per person.

SULPHUR FUMIGATION. — Fumigation by the burning of sulphur is the most common method employed by boards of health in the disinfection of apartments in which contagious disease has existed, and the clothing worn by the patients during their illness. In an address delivered by the distinguished chemist, Dr. E. R. Squibb, before the Kings County Medical Association, he called attention to the fact that there must always be an abundance of watery vapor in the room to be disinfected; otherwise the sulphurous-acid gas generated by the burning of the sulphur is not an efficient disinfectant. The same is true of chlorine gas when used for disinfecting purposes.

DRIED POTATO. — In the *Voënno-Sanitarnoië Dëlo*, Dr. Jakov M. Shmulevitch emphatically draws attention to dried potato as an important food-article, possessing some very valuable advantages in comparison with the vegetable in fresh state. The advantages claimed for the article are these: (1) while fresh potatoes easily rot, blacken, and sprout, dried potatoes, when kept duly protected from moisture, remain in the best condition for a very long time; and (2), being by far lighter and less bulky than fresh potatoes, are by far more convenient for preservation and transportation, which point has a great practical importance, especially in time of war. To be fit for culinary use, the article requires a preliminary maceration in water for about ten or twelve hours.

SPONTANEOUS COMBUSTION. — The following case of spontaneous combustion is reported in the *British Medical Journal* by Dr. Booth: "On the morning of Sunday, Feb. 19, I was sent for to examine the remains of a man, aged 65, a pensioner of notoriously intemperate habits. I found the charred remains of the man reclining against the stone wall of the hay-loft. The main effects of combustion were limited to the corpse, and only a small piece of the adjacent flooring and the woodwork immediately above the man's head had suffered. The body was almost a cinder, yet retained the form of the face and figure so well that those who had known him in life could readily recognize him. Both hands and the right foot had been burnt off, and had fallen through the floor into the stable below, among the ashes; and the charred and calcined ends of the right radius and ulna, the left humerus, and the