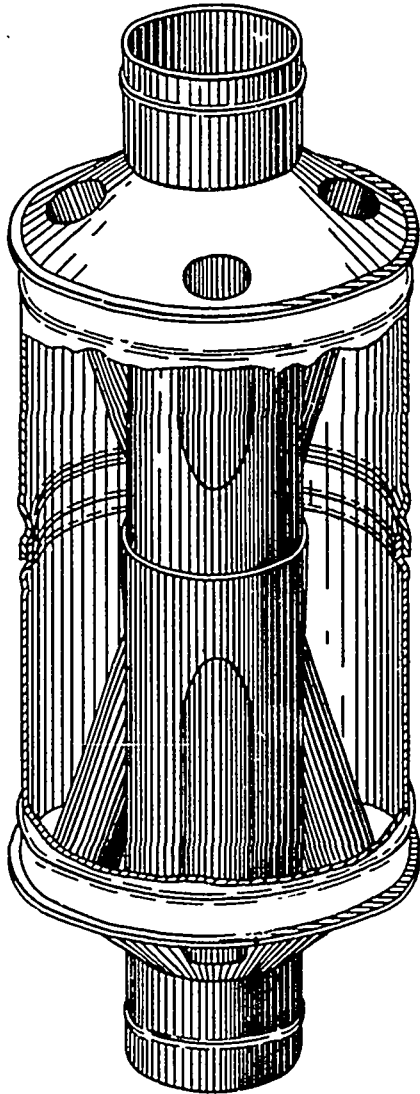


Single and double smoke drums have been long in general use and have radiated into rooms quantities of heat in proportion to the exposed surface of the smoke drum, to the distance the drum was placed away from the fire, also the temperature of the fire and the strength of the air draft passing through the fire. It must be borne in mind a coal fire allows its heat to be extracted from it by the iron and brick work that



surrounds the fire, while a fire made of wood is inclined to travel a long way beyond the seat of the fire if allowed to do so, and the smoke drums and pipes of a wood fire will radiate a large share of the heat made in the stove. But no coal fire can burn or be kept alive without some draught of air passing through it which causes the part of the heat of the fire to pass up through the smoke pipes to be discharged into the outside air, unless arrested and radiated into the living rooms by a smoke drum.

It is found that it takes about five times the quantity of heat to raise a volume of water or air ten degrees in temperature more than it does to raise it five degrees, and the difficulty of heating air or water becomes more as the temperature increases. By passing a thin stream of cold water or air over a hot plate at a reasonable rate, about twenty times the number of cubic feet would be heated to a given temperature in a stated time than if the whole quantity of water or air to be heated was collected into one large vessel, and a furnace placed in the centre or under it. Heating the water or air in a thin stream is called heating by circulation. Heating by bulk is called heating by radiation. The fuel that will heat to a temperature of 60 degrees will have to be increased in far greater proportions to raise the heat of the same rooms to 70 degrees. This shows the necessity of using the Chilcoat Hot Air Heating Drum, which combines the two systems of heating in one article. The outside casing or shell radiates quite as much heat as any of the drums formerly used. Then the air of the room is kept in a lively and healthy motion by rapidly passing

through an inner drum connected by three collecting and distributing tubes acting similarly to tubes in hot air furnaces. The Chilcoat Hot Air Heater is really a secondary furnace.

The patent rights of this valuable article are for sale by J. Robertson, 62 Church Street, Toronto.

LITERARY NOTES.

A very interesting and attractive booklet, "Montreal Homes, Hints to Intending Builders," has been sent us by the author, Arthur J. Cooke, architect, Montreal. It contains a number of illustrations and many suggestions of great value to the intending house owner.

The annual reports of the several departments of the civic government of Halifax, N.S., for 1896-7 have reached us from the office of the city engineer, F. W. W. Doan. A great mass of information, much of it minute in detail, is given. The work of the year in all the departments of the city government is described. The city engineer thus sums up the difficulties of city improvement: "There is a great difference in foremen and the number who can be relied on for cheap work is limited. We are expected to employ men, simply because they are citizens of Halifax, whom no city contractor would have on his work. Such a system is useless and extravagant, if the taxpayer is to get one hundred cents for every dollar expended. The very men that claim that such men are not employed are the first to complain that there is nothing to show for the expenditure. The Works Department is not a Charity Board, and must be run on business principles. Good men can be obtained in Halifax and we should be permitted to select the best. The results during the last three years show what can be done by good men, and the standard set up should be maintained. The accounts of the Clerk of Works tell the story more forcibly than it can be expressed here."

Very few who are engaged actively in the mineral industry are able to find time to read up extensively in technical literature, however much they realize the importance of being fully and accurately informed on all that is going on about them in their own branch of industry. Such busy people will eagerly welcome "The Mineral Industry," each year as it appears from the press, for they find in it a maximum of the information that they need, at a minimum of expense both of money and time. An outline of the table of contents shows the broad field covered by volume VI. This volume contains a review of the production of abrasive materials and their uses, including carborundum, corundum, crushed steel, diatomaceous earth, emery, garnet, grindstones, pumice, quartz crystal, tripoli and whetstones. Special articles on Carborundum, by E. G. Acheson; The Garnet Industry of the United States, by F. C. Hooper, and the Volcanic Ash Deposits of Nebraska, by Erwin H. Barbour. The Mineral Industry, published by the Scientific Publishing Co., 253 Broadway, New York; price, \$5.

The "Engineer's Hand Book," just published under the auspices of the Canadian Association of Stationary Engineers, is a handy pocket volume of 286 pages, and contains about 130 pages of tables and information for every day use by steam users, engineers and firemen. Besides a vast amount of data for engineers it contains a short history of the association and its aims. J. G. Robertson, the Executive secretary, assisted by J. J. York, O. E. Granberg, B. A. York and R. A. Ross, E.E., are named as the principal compilers, and well they have done their work. It would be hard to find a book in which so much information is packed into so small a compass.

"Friction and Lubrication" is a pamphlet published by the Joseph Dixon Crucible Co., Jersey City, U. S., which describes the excellencies claimed for the preparations of graphite placed on the market by this company. There is also issued by the same company "Graphite as a Lubricant," which treats more extensively of the same subject.

The Ingersoll-Sergeant Drill Co. has issued a new catalogue, No. 32, which illustrates and describes the air compressors built by this company. Separate pamphlets are also issued to describe special installations. One of these describes the plant of the contractor of the Jerome Park Reservoir, New York, who has adopted a compressed air system. The work of excavation involves the removal of over 7,000,000 cubic yards of material, about half of which is rock. The field of operations covers an area of $1\frac{1}{2}$ miles by $\frac{3}{4}$ of a mile. A compressed