

Messrs. A. W. Morris & Bro. (the J. A. Converse Manufacturing Company), and Frank Redpath, of the Canada Sugar Refinery, speak so highly of the results that they are getting from our improved boilers is because they hold stock in this company. In one way we are sorry that the tale is false. If it were true that they were large shareholders their names on our books would be strong proof of the bright prospects of the owners of these patents. But the stock has never been offered to them and they have no pecuniary interest in this company. Their very gratifying statements are simply the unvarnished record of their actual daily experience with these boilers.

Yours truly,

DOMINION SAFETY BOILER CO.,

Per J. F. Torrance, Mngr.

Montreal, Aug. 14, 1888.

#### COMBUSTION OF FUEL.

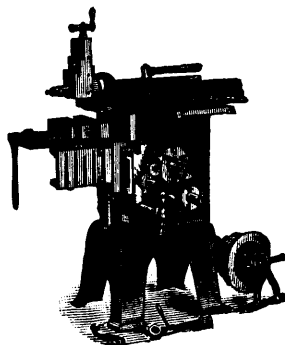
(Written for the CANADIAN MANUFACTURER.)

Continued from our issue of July 20.

We have already seen that carbonic acid is formed by the union of one atom of carbon with two atoms of oxygen: their weight being as six to sixteen. Carbonic oxide, again, is composed of the same quantity of carbon, but one half the quantity of oxygen; their weights being as six to eight. Both gases are invisible; the former is incombustible, the latter combustible. Evidently then, if we pass off the carbon—either of the gas or the solid fuel—in union with oxygen, in any other proportion than that of carbonic acid, we cause a corresponding loss of heating effect. The oxide may be formed in two ways:—either by abstracting one portion of oxygen from carbonic acid, or by adding a second proportion of carbon to the same—in the one case, one volume of oxide is formed; in the other case, two volumes. In practice this oxide is most commonly formed thus:—the air, passing to the furnace from below, gives out its oxygen to the glowing carbon on the bars and generates heat in the formation of carbonic acid. This acid at a very high temperature passes up through the body of the incandescent solid fuel, takes up an additional portion of carbon, and is converted into oxide. Thus we have in place of one volume of acid, two volumes of oxide, and have actually absorbed heat in the conversion; and further, if the additional oxygen is not supplied to complete the saturating equivalents of these two volumes—that is to produce carbonic acid—they will pass away half consumed and a proportionate waste be the result. The correctness of this practice has been proved by recent experiments at the Montreal Water Works, conducted by the chief engineer, Mr. D. Kearney, there. About the beginning of the present year a smoke consumer and fuel economizer (Dobson & Brodie's) had been attached to three Lancashire boilers at the wheel-house, the principle of which device is to admit a certain regulated quantity of air into a chamber at rear of bridge, which, passing therefrom in finely divided streams, mingles with the gases there volatilized and igniting them. Results show a saving of about one ton of coal per day, on three twenty-six feet boilers; and the engineer's report to his committee states that never in the history of the water-works has the consumption of coal been so low as during the use of this apparatus. It may be stated that no boilers in Montreal are so hardly pressed and the furnaces more roughly treated as those of these works. The bad coal of the lower provinces having to be frequently turned over to effect ordinary combustion, and as a consequence much incandescent coal is thrust over the bridge, and a part of the consumer was found to be warped at the close of the battery's run. As the cost of the damage, however, is small, the patentees undertake to keep the apparatus in repair during the life of the boilers; even although such damage may be the result of careless firing. The prevention of smoke is by no means the least recommendation of this excellent appliance. The universal and ever deepening feeling against the pollution of the atmosphere with black smoke is one with which every right thinking mind must sympathize. Indeed it is difficult to see why any manufacturer should transgress in this matter when by adopting suitable appliances he may not only cease to annoy his neighbors but also greatly benefit himself; for as we have before said, any economy in fuel materially lessens the cost of production.

We recently stated that the D. Lothrop Company, Boston, publishers of *Wide Awake*, had set aside \$2,000 to be distributed as prizes—ninety-four in number—to be given to the ninety-four teachers and pupils in Canadian and American schools who send the most desirable stories, sketches, essays, poems, etc. These prizes are from \$5 to \$500; and the compositions must all be in before December 1. The object is two-fold—to stimulate improving people to

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find out what they are good for, and to advertise *Wide Awake*, which is one of the very best juvenile magazines published in the English language. The book itself tells all about the matter, and it can be had at any of the bookstores or from the publishers, the D. Lothrop Company, Boston, Mass., for \$2.40 a year.

"THE DOMINION ILLUSTRATED," the illustrated weekly paper of the Dominion *par excellence*, published by Messrs. G. E. Desbarats & Son, Montreal, is intended to illustrate the Dominion of Canada, its scenery, cities, industries, attractions, resources, public works and prominent men. In these directions the field is immense and the variety infinite. The pictures that are shown are mostly from photographs, and are of such character that Canadians may take pleasure in sending them abroad, and that all who are at all familiar with the subjects will quickly recognize them as truthful and correct. All the issues of this meritorious journal that have reached us testify to the faithfulness with which the publishers have kept their promise in this respect; and a happy effect of the existence of it is to make this Canada of ours not only better known to other nations, but also to spread a healthful and valuable knowledge of it among Canadians. All of the more pretentious of the pictures shown are of sufficient merit to entitle them to be framed as ornaments for the household—only because of their numerousness, they would soon be too great in number for such a purpose. Of course all who take the paper regularly should preserve the numbers and at stated intervals have them bound in good style. The book would make a beautiful library or centre table ornament.