grow from idle habits contracted from the want of something useful to employ the mind. There is no reason why the columns of a Scientific Magazine should be made so dryly instructive as to afford no interesting and practical information to the wives and children of a mechanics family. On the contrary it is particularly desirable that it should be otherwise. Under the head "Domestic," will be found a few pages of family reading, consisting of useful hints, and pleasing instruction for wives and daughters; nor will the boys be neglected, for in the future we shall endeavour to supply them with description of scientific amusements and manly pastimes; in fact we hope to make the CANADIAN MECHANICS' MAGAZINE always a welcome visitor to the home of the artizan.

We have much pleasure in stating that we have obtained the assistance of Mr. Boxer, Architect, in the Editorship of the Magazine, and who will assist in its general management. His professional experience and knowledge of the description of information suitable for the columns of a periodical devoted to the education and improvement of the Mechanics of Canada, renders this appointment one very congenial to their interests. This gentleman during five year's residence in the New England States, visited the greater portion of their Manufactories, and attributes to a great extent the prosperity of those States to the facilities their children possess for obtaining a thorough mechanical Education. Every mechanic there subscribes for one or more scientific papers, and, consequently, is well informed in all the new improvements in machinery, &c., which are therein mentioned and illustrated, of which they are always ready to turn to some profitable account. Thus it is we so frequently read in their Scientific papers the biography of so many opulent manufacturers and self made men, who have risen to wealth and position from humble means by their mechanical talent. We have no doubt whatever that any publication tending to better educate our own Artizans in the proper use and knowledge of Mechanical Art, &c., will stimulate many young men to greater industry and awaken latent talent, and also will contribute greatly to increase the comforts and well doing of a large class in the Community, and even do something more than this, for by the perfecting of Machinery they will, with greater facility, be able to turn to more profitable account the natural products of the country. Such being then the object of the publishers, we trust that as Mr. Boxer will soon make a tour of the Dominion in our interest he will meet with a cordial support from every one to whom, mechanical knowledge and general information, is of value.

G. B. BURLAND,
General Manager.
The Burland-Desbarats Litho. Co.

THE PROVINCIAL EXHIBITION AT OTTAWA.

We give an illustration on page 296 of the Provincial Exhibition at Ottawa. In our November number, however, we shall furnish full particulars of the building and its arrangements, and afford as many illustrations as possible. Exhibitors, however, who are desirous of making known their inventions or improvements in machinery, would do well to make early application to the Editor.

We regret that the Exhibition took place too late in the month to give sufficient time for noticing in this number of the Magazine the meritorious and useful machines, &c., there exhibited.

BURSTING OF WATER SUPPLY PIPES IN WINTER.

BY MR. W. H. BAR[illegible] *

Every winter in this country there are many fatal accidents caused by the explosion of what are known as circulating or bath boilers; there is also a great amount of damage done to house property, and some domestic misery created by the bursting of water pipes, caused by the water freezing in them.

I have paid a little attention to these two subjects, which are somewhat of a kindred nature, and when I was honoured by a request from your society to read a short paper on them, I gladly acceded to it, knowing the wide-spread influence of your members, and feeling that some good would be done to society if I could only lay before you certain facts as they appear to me. I feel very diffident of my ability to do this, and hope you will bear with me if I appear tedious in describing things which may be familiar to many of you, but without doing which I might render myself obscure to those acquainted with them.

There seems to be among many people an impression that domestic boilers often explode through a difficient water supply. I believe that is not the case, and I think it will be very difficult indeed to demonstrate that any accidents have occurred through this cause. A great number of boilers burst every year which are unreported, because not attended with fatal results. Of those which have been reported during the past six or seven years, half appeared to have exploded through stoppage of the circulating pipes by ice, and the remaining half have been caused by the fixing of stop taps in those pipes.

A few years ago circulating boilers were only in existence in comparatively few large houses and hotels, but now nearly all new houses of the value of $120 per annum or more built in this country have bath boilers, and unfortunately, the great majority are of cast iron, of the very worst form for resisting pressure. There are two slightly different modes of fixing these in this district, which I will endeavour to describe.

The ordinary and cheap way of fixing and supplying kitchen boilers is illustrated by Fig. 1. The supply of cold water is received in a cistern at the top of the house, and conducted by the "down pipe" into the boiler; having passed through this, and having become hot, and therefore of less specific gravity, it ascends what is called the "up pipe" to the hot water cistern, from which it is drawn as required for use.

It will be seen that the pressure the boiler has to sustain when filled with water depends upon the height of the supply cistern above it; 2ft 3 in of water in column being equal to a pressure of 1 lb. on the square inch, therefore 60ft. high will give a pressure of 27 lb. per square inch on the boiler. As, however, most boilers are only about 30ft, or 40ft. below the cistern, we may consider that the average pressure at which they work will be about 15 lb on the square inch.

In good houses in this district copper cylinders are fixed in connection with the boiler, in order to give an abundant supply of hot water, and for preventing and rendering explosions impossible; that is, if we are to believe what is told us by more than one respectable tradesman of this district. So much has been said about copper cylinders preventing explosions by men whose business it is to know better, that I will refer to it a little latter on.

Fig. 2 represents the arrangement when the hot-water cylinder is used It differs slightly from the plan I have already described the hot-water cistern being dispensed with, and a large cylinder, generally of copper, being placed in the up pipe instead. A pipe is taken from the top of this cylinder, called the air pipe, which is open to the atmosphere, and in which water ascends to the level of the cold water supply cistern. The great advantage in using these cylinders is obvious, as the constant circulation which is always taking place causes the water when cool to descend into the boiler, and, when hot, up again in the cylinder, absorbing all the heat possible for the boiler to give it, which is not the case in the simpler and less expensive mode of fixing. Sometimes the hot water is drawn from the top of the cylinder, and sometimes from the air pipe. In both these systems of fixing it will be seen that the boilers are always full of water, and that, supposing the supply of water to cease, it would not be possible to drain them dry, causing the fire to make them

* Read before the Society of Municipal Sanitary Engineers, London.