AS *Much* READING *as Two* BIG NOVELS

Focussed into Two Pages from High Class Current Periodicals

MAKES HIS OWN TEMPERATURE

Canadian Inventor Gets Ahead of the Weather Man

A MAN who can get a warm bath from the heat that goes to waste up his chimney every time the fire is lighted, and who can keep his house at 65 deg. Fah. inside, while the street is anything above 95 in the shade, must be a rather clever sort of person. That man is Alexander Graham Bell, the Canadian inventor, who for a long while now has been alternately a citizen of Washington and of Nova Scotia, and to whose fame and future memory a great memorial has been erected in the City of Brantford, Ont., designed by Walter Allward, the Canadian sculptor.

Alexander Graham Bell is a pretty old man now, and it's a long while since he invented and operated the world's first telephone in Mt. Pleasant, a suburb of Brantford, Ont. But he is still thinking out things to better mankind. His latest popular contribution to practical science in the form of writing we came across the other day in an issue of the National Geographic Magazine, published last February. The subject is peculiarly apropos just now.

How to Keep Cool in Summer and How to Keep Warm in Winter.

Bell recognizes the fact that enough heat goes to waste all summer to keep the homes of mankind comfortable all winter, and at the same time lower the summer temperature several degrees.

So he says, taking some familiar examples, a cosy for our teapot, a fireless cooker for our dinner, and a thermos bottle for our heated liquids show how much heat may be conserved by simply taking precautions to prevent radiation Our hot-water boilers are not protected by coverings of asbestos paper or other insulating material, so that the water gets too cool for a warm bath very soon after the fire is put out.

I have made experiments to ascertain whether some of the heat wasted by radiation could not be conserved by insulating materials, with rather astonishing results. A large tank of zinc was made which would hold a great deal of water. This was inclosed in a box very much larger than itself, leaving a space of about three or four inches all around, which was filled with wool. I then found that hot water put into that tank cooled almost as slowly as if it had been a thermos bottle.

I then attempted to save and utilize some of the heat given off by a student's lamp. A couple of pipes were led out of this insulated tank and placed in a hood over the lamp. Thus a circulation of water was effected. The water heated by the lamp found its way up into the tank and produced a sensible rise of temperature there. Next day when the lamp was again lighted it was found that the water in the tank still felt slightly warm. It had not lost all of the heat it had received at the former heating. When the lamp was again put out, the temperature of the tank was considerably higher than on the former o casion.

This process of heating was continued for a number of days, and it became obvious that a cumulative effect was produced, until at last the water in the tank became too hot to hold the hand in, and it was determined to see how long it would hold its heat. The temperature was observed from time to time, and more than a week after the lamp had been put out the water was still so warm that I used it for a bath.

Since then this insulated tank has been taken up to the attic of my house in Nova Scotia and has been installed there as a permanent feature. I have the habit of working at night and like to take a warm bath somewhere about 2 o'clock in the morning. Unfortunately the heating arrangements in the house have given out long before that hour and only cold water comes from the kitchen boilers. I connected the insulated tank with an iron pipe let down my study chimney in the hope of saving and utilizing some portion of the heat that escaped up the chimney every time the fire was lighted.

I have had this apparatus in use for over a year, and find that at any time of the day or night I am always sure of a warm bath from the heat that used to be wasted in going up the chimney. In this case there was only one straight pipe, so that the amount of heat recovered bears only a small proportion to that still wasted. A coil of pipe in the chimney or special apparatus there would, of course, be much more efficient.

I think that all the hot water required for the use of a household, and even for warming a house, could be obtained without special expenditure for fuel by utilization of the waste heat produced from the kitchen fire and the heat given off by the illuminants employed.

Of course, water can only be heated to the boiling temperature; but there are many liquids that can be heated to a very much higher temperature than this without boiling. I took a tumbler of olive oil and heated it by means of a thin iron wire connected with a voltaic battery. I placed in the tumbler of oil a test-tube filled with water. In a short time the water was boiling, but the oil remained perfectly quiescent. If you store up hot oil instead of water you will have at your command a source of heat able to do all your cooking, and even produce steam power to work machinery.

HE ALSO SERVES.

The soldier of the home trenches.

—From the San Francisco Chronicle.

We have plenty of heat going to waste during the summer-time. Simple pipes laid up on the roof and containing oil or some other liquid would soon become heated by the sun's rays. The hot oil could be carried into an insulated tank and stored. You could thus not only conserve the heat that falls upon the tops of your houses, but effect some cooling of the houses themselves by the abstraction of this heat.

If man has the intelligence to heat his house in the winter-time, why does he not cool it in the summer? The problem of cooling houses is one that I would recommend to your notice, not only on account of your own comfort, but on account of the public health as well.

Now, I have found one radical defect in the construction of our houses that absolutely precludes the possibility of cooling them to any great degree. You will readily understand the difficulty when you remember that cold air is specifically heavier than warm air. You can take a bucket of cold air, for example, and carry it about in the summer-time and not spill a drop; but if you make a hole in the bottom of your bucket, then, of course, the cold air will all run out.

Now, if you look at the typical tropical houses, you will find that they are all open on the ground floor. Supposing it were possible to turn on a veritable Niagara of cold air into a tropical house, it wouldn't stay there five minutes. It would all come pouring out through the open places below and through the windows and doors. If you want to find your leakage places, just fill your house with water and see where the water squirts out!

I began to think that it might be possible to apply the bucket principle to at least one room in my Washington home, and thus secure a place of retreat in the summer-time. It seemed to be advisable to close up all openings near the bottom of the room to prevent the escape of cold air and open the windows at the top to let out the heated air of the room.

Now, I have in the basement of my house a swimming tank, and it occurred to me that since this tank holds water, it should certainly hold cold air; so I turned the water out to study the situation. The tank seemed to be damp and the sides felt wet and slimy.

I reflected, however, that the condensation of moisture resulted from the fact that the sides of the tank were cooler than the air admitted. Water vapor will not condense on anything that is warmer than itself, and it occurred to me that if I introduced air that was very much colder than I wanted to use, then it would be warming up in the tank and becoming dryer all the time. It would not deposit moisture on the sides and would actually absorb the moisture there.

I therefore provided a refrigerator, in which were placed large blocks of ice covered with salt. This was placed in another room at a higher elevation than the tank, and a pipe covered with asbestos paper was employed to lead the cold air into the tank.

The first effect was the drying of the walls, and then I felt the level of the cold air gradually rising. At last it came over my head. The tank was full, and I found myself immersed in cool air. I felt so cool and comfortable that it seemed difficult to believe that Washington stood sizzling outside. I climbed up the ladder in the swimming tank until my head was above the surface, and then found myself breathing a hot, damp, muggy atmosphere. I therefore speedily retreated into the tank, where I was perfectly cool and comfortable.

Guided by this experience, I tried another experiment. I put the refrigerator in the attic and led the