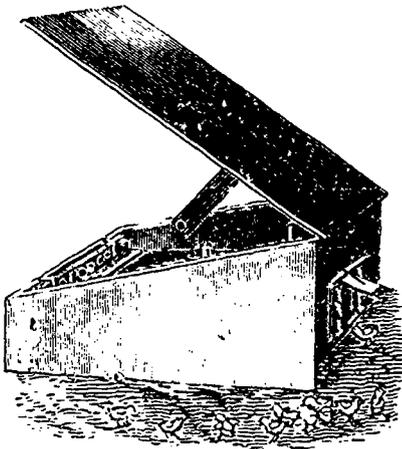


around the outer edges of the chamber only, none of the heat passing direct into the centre of the egg chamber. The advantages of this system of distributing the heat will readily be understood, the egg chamber of an incubator has to be maintained at a uniform temperature of  $102\frac{1}{2}$  degrees and at the season of the year when the machine is mostly used the temperature of the room where the incubator is being operated, will probably not exceed 50 degrees, this is a difference of over 50 degrees between the inside of the egg chamber and the temperature outside of the machine, the consequence of the disparity in the temperatures of the egg chamber and the room being that the egg chamber is constantly losing heat, and in all incubators where heat is passed direct to all parts of the egg chamber alike, the temperature will be found higher in the centre than at the outer edges.

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 "TORONTO" OUT DOOR BROODER.  
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The "Toronto" Out Door Brooder is substantially built of pine and finished with two coats of paint, the maker claims that it will keep the chicks warm and comfortable in any kind of weather, that the lamp cannot blow out, the ventilation is simply perfect, and it is impossible for the chicks to crowd or become over-heated. The brooder is equally as successful for indoor work. The price is very moderate.

Many people have an idea that any kind of a hot box will do for a brooder, a greater mistake was never made, as many people have found to their cost. It is just as important to have a good brooder as a good incubator.

The "Toron-

ARTIFICIAL INCUBATION.

SOME INTERESTING RESULTS AND THEIR SUPPOSED CAUSES.

BY H. J. WOOD, HULL, QUE.

I THINK that in this closing letter I cannot, perhaps, do better than give some particulars of a hatch just concluded in the small incubator with which we had such great success last year. Its capacity is only 50 eggs, which were, on this occasion, made up as follows: There were 26 of our own taken from two pens of barred Plymouth Rocks, in one of which there were nine pullets 11 months old with a cockerel of the same age, in the other there were nine pullets of 11 months old with a male of about 20 months old, all unrelated; of these eggs all were found fertile when tested on the seventh day of the hatch, but at that time one germ from the cockerel pen was dead. The other 24 eggs were from a friend and had been laid by black Minorca hens of ages varying from nine months to three years headed by a male of about 20 months; these also, were all fertile when tested on the seventh day but had among them five dead germs. Of these 24 Minorca eggs we hatched only six, or 25 per cent., while of our own 26 we hatched 19, or 73 per cent. The temperature of the machine was fairly uniform throughout the hatch, excepting that upon the 14th day it wobbled considerably between  $^{\circ}101$  and  $^{\circ}105$ . As to the air space, we had great trouble in getting the eggs to evaporate quickly enough, not putting in any moisture until the 19th day when we put in a little, and even that I think we should have done better to have left out, as there were nine chicks left dead in the shell with the yolk only partly absorbed, which latter fact is usually an indication of imperfect development, caused sometimes, and I think in this case, by insufficient evaporation, which in its turn was probably caused, as I said before, by the cooking and laundry work of the household being done in the house so charging the air with moisture that it could not quickly enough absorb the moisture from the eggs. It cannot be too strongly emphasized that proper evaporation is the very keystone of success in artificial hatching. So far, so good, we conclude that want of evaporation, indicated by too small an air space, caused by moisture loaded air, prevented our chicks from properly hatching, so leaving in the case of nine of