

Briefly stated, all that is required to hatch eggs artificially is a temperature of $100\frac{1}{2}$ degrees at the centre of the eggs (101 to 103 degrees by contact). At the same time the eggs should be immersed in still air (quiescent atmosphere) containing moisture of a relative humidity of 45 to 70 per cent. If we can believe the incubator manufacturers, their respective machines are built so that the exact humidity necessary is supplied.

This atmosphere should be changed sufficiently often to carry off the waste gases eliminated by the eggs. Too much ventilation will prove to be deleterious.

There is a great difference in the various types of incubators manufactured. The use of the standard makes will prove more satisfactory. Many machines have been placed on the market which will hatch successfully for one or two seasons, and



Mammoth Incubator of 10,000 eggs capacity. These machines are in use on some of the larger ranches, where they are used principally for custom hatching.

then practically become worthless. They have been constructed of cheap materials, have not been put together very well, and cannot be relied on to give satisfactory hatches season after season. Then, again, there are some machines placed on the market which, as regards manufacture, are all that can be desired, but fail to give good results, simply because the temperature-regulating device is cheap, flimsy, and unreliable. Therefore it is wise to take no risk with inferior makes, but secure durable and efficient machines with which to do this important work.

There are many different kinds of machines, but a description of all of them is quite impossible in a publication of this kind. They are nearly all constructed on similar principles and along the same lines. The majority of them receive their heat from lamps that burn kerosene. In some places gas is being used for heating purposes. Recently a few makes have been constructed with electrical attachments. However, the employment of gas or electricity in incubators depends largely upon local conditions, and these methods of hatching chicks will not be discussed here.

The hot-air and hot-water incubators usually hatch with equal success, each involving the same general principles, with slight variations of minor importance.