

POINTERS.

Test eggs on the eighth day and remove all infertile ones.

Test again on the sixteenth day.

Keep the bulb of the thermometer on a fertile egg from the tenth day : at about 15 days the animal heat will begin to rise in the fertile egg and it is, therefore, very necessary that the thermometer is on a live egg.

Do not trust to one thermometer as one may go wrong and you might loose the whole hatch.

The feeding of cut green bones and giving fowls plenty of exercise tends to give more and strongly fertilized eggs.

Do not discard a machine because it only hatched a dozen chickens from 100 eggs when only 30 were fertile.

Weak germs seldom hatch and as a rule the fewer the fertile eggs the smaller the percentage hatched.

It is a good plan to run your hand over the eggs a few days before the hatch is due and keep the thermometer on a good warm egg for it is sure to hatch a strong chick. In this way you can soon be able to estimate a hatch.

ARTIFICIAL INCUBATION.

MACHINE VS HEN—FIVE NECESSARY QUALIFICATIONS.

BY H. J. WOOD, HULL, QUE.

HAVING glanced at some of the more necessary qualifications of the egg that is to be incubated we may pass on to the incubator itself, and I would first of all seek to make very clear this fact, there is nothing mysterious about an incubator, it is a machine, neither more nor less ; if you leave it in your room unlit, unfilled and unattended to it will stand there as would any other machine, doing nothing. if you fill it with pebbles and light your lamp and so on, it will go on as long as you please to leave it so, producing nothing, similarly if you fill it full of good eggs and leave the lamp unlit and the machine unattended to it will go on also producing nothing, while if you give it perfect eggs, light the lamp, supply air and moisture exactly as they should be supplied and do all other things that are necessary to the perfect hatching of chicks for the

whole of the three weeks of incubation you will certainly hatch by the machine a chick from every fertile egg, and conversely, that we fail to hatch every perfect egg is proof either that we do not do the things that it is right we should do, or, that our machine is defective in some of the qualities necessary to a perfect hatcher. In the judgement of the writer the chief of those qualities are the following : First, the ability to supply to each and every egg within its walls a certain degree of heat, ordinarily $^{\circ}103$, so evenly distributed that the eggs on the outside and in the corners have at any given time exactly the same heat as those in the centre ; secondly, the power to maintain this heat at the same degree whether the temperature outside of the machine is $^{\circ}35$ or $^{\circ}75$; thirdly, the ability to prevent the passage of air in the smallest amount either to or from the eggs except through the openings especially provided for that purpose : fourthly, a means of controlling the evaporation of moisture from the egg so that the skin surrounding the chick inside the egg will be neither too dry nor too wet to be easily broken by the chick when its time is due to come out, and lastly, although maybe it is not absolutely necessary, there should be a nursery under the egg trays into which the newly hatched chicks can descend and be at peace instead of trampling upon and stifling their later coming brothers and sisters.

As to the value of the incubator as a hatcher in comparison with the hen ; a fairly good machine will, in careful hands, hatch more chicks than will hens to cover an equal number of eggs. Take a 200 egg machine full of eggs and run it for three weeks, at the same time setting say sixteen hens on the same number of eggs and if at hatching time you do not say the work for the machine is less than that required to keep them cleaned, fed and attentive to their work, your experience will have been very different from that of the writer and you will find that every egg possible to be hatched is hatched as well in the machine as under the hen, while no eggs will be broken or little chicks stifled at their birth. The reader may think a great deal of this to be irrelevant but it is not, there is no absolute quality of perfection about any incubator made whatever may be its price, it will hatch for you precisely as you use it as a means of employing your own intellect as a substitute for the instinct of the hen who, you must remember, sticks