

Every Bad Shipment Injures the Trade.

The Dominion Fruit Inspectors at Montreal report that several shipments of apples have been made lately to South Africa. Early in the season the Markets Division of the Department of Agriculture called attention to the fact that South Africa had very stringent pest laws, rendering it necessary to ship only perfectly clean apples. Unfortunately, some of the fruit that has gone through by the S. S. Melville to South Africa was very inferior, and cannot fail to result in loss to the shippers. The injury, however, does not end with the shipper of the fruit. By the shipment of this poor stuff a stigma is cast upon all Canadian fruit and Canadian fruit-growers generally. Inasmuch as the reputation of every Canadian fruit-grower is jeopardized by this poor fruit, it would appear that they have a right to dictate to a certain extent what class of foods shall leave the country.

No. 1 Apples Must be the Same Standard One Season as Another.

The Fruit Division, Ottawa, sends us the following item: In reply to a complaint that certain apples were not good enough for the No. 1 grade, though thus marked, a grower says: "I supposed the year would have quite a lot to do with governing the grade. If the strict letter of the law is put in force with regard to No. 1 apples, there will be very few in this neighborhood." It cannot be too generally impressed upon packers and growers that the description of a No. 1 apple never varies. Our export apples reach many persons who have no idea of the crop conditions in Canada, and this export trade could never be built up except by maintaining a uniform quality in our No. 1 grade. A No. 1 apple in any year is an apple practically without blemishes, and of good size and color.

POULTRY.

The Chicken in the Egg.

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There is nothing more wonderful in Nature than the common, everyday egg, yet few regard it in any other light than that of food or for the reproduction of the species. I think, however, for several reasons, an egg can claim to be one of the wonders of Nature.

First, there is the truly marvellous strength of an egg. Considering the elements of which it is composed, it is one of the strongest things in

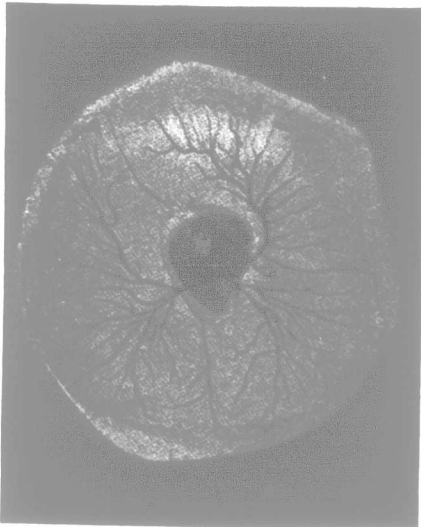


1. The egg at the end of twenty-four hours, showing the dark speck which will ultimately form part of the head of the chicken.

the world. I have known a man so strong that he could tear an ordinary pack of playing cards in twain with his hands—a wonderful feat of strength—yet when he placed an egg longitudinally between his hands, one end in each palm, and exerted all his strength, he was unable to break it, even though he placed his hands between his knees in order to obtain more pressure.

This is all the more surprising when it is remembered that the shell of an egg is perforated all over by a multitude of minute holes in order to allow the air to enter and sustain the chicken within during the stages of development.

Then there is the mystery of life within the shell—a mystery that has defied the investigations of scientists and naturalists since time immemorial, and still defies them. There is, moreover, the determination of species, of breed, of color,



2. At the end of the third day the yolk is permeated all over with blood vessels and several new organs begin to develop, which makes this a most important day in the incubation.

and of sex. What forces are at work to determine these wonders, no one can even suggest.

Two eggs are identically similar in appearance and in all respects, and yet from one a pure white bird will be hatched, whilst from the other a bird containing all the colors of the rainbow in its plumage; from one a Minorca, from the other a Leghorn; from one a cockerel, from the other a pullet. There must be very grave differences to produce such diverse results, but what they are no one knows. There are, it is true, a



3. The egg at the fourth day, when limbs commence to make their appearance.

whole host of theories, but like many other theories, they utterly fail when put into practice.

In a new-laid egg the germ of life is quite invisible to the naked eye, but it is situated within the vitelline membrane, which encloses the yolk. The yolk resembles a thickened horseshoe in shape, the lighter-colored part, that, figuratively speaking, within the shoe, being composed of a lighter material, named the utricle, and it is at the mouth of this utricle that the germinative vesicle is situated.

POPULAR ERRORS.

The yolk is held in position by two pieces of thickened albumen, termed the chalazæ, terminating in the white, which act as buffers, keeping the yolk in position. These are the pieces removed when beating an egg; many people think they have something to do with the germ of life, but this is not the case. Were these absent the germ would continually float to the top. Owing, however, to the presence of the chalazæ, the germ is held in place, but is always uppermost, and therefore nearest to the heat in incubation, whether natural or artificial, as the lower part of the yolk is of denser material, and naturally sinks to the bottom.

A very common idea among many people is that the chicken is formed from the yolk. This is quite wrong, as it is the albuminous matter, the so-called white, that contains the materials for the formation and growth of the chicken, the only use of the yolk being to supply nutriment to the embryo during the different stages of development.

Immediately an egg comes into contact with heat of a sufficient temperature the germ is started into activity, and should this heat be maintained, a chicken should make its appearance at the end of from nineteen to twenty-one days. At

the end of eighteen hours' incubation a distinct speck can be seen towards the top end, which will ultimately form part of the head.

It is possible with a powerful light to see this dark speck through the shell, and after a certain amount of experience one can tell at this stage whether the egg is fertile or whether it does not possess the germ of life. Should the shell of the egg be exceedingly thin, and the lamp a powerful one, some blood-vessels can be distinguished, but a good deal of practice is necessary for this.

When another six hours have elapsed (Fig. 1) a change is noticeable, the speck having increased in size and become more prominent. When the egg has been submitted to heat for forty hours there is no very apparent change, but the parts are somewhat more distinct.

IMPORTANCE OF THE THIRD DAY.

By the end of the third day (Fig. 2) the yolk is permeated all over with blood-vessels, practically extending throughout the entire contents. The third day is the most important, owing to the fact that several new organs begin to develop. Special care should be taken during the first 72 hours' incubation, as these are undoubtedly the most critical.

By the fourth day (Fig. 3) the embryo has increased considerably, but accompanied by a corresponding decrease in white. The limbs commence to make their appearance, some of which are easily traced. Upon either the fourth or fifth day a duct is formed, which in the case of the female ultimately becomes the oviduct, but as the male has no use for such an organ it almost immediately disappears in him. It is not until this time that the future sex of the bird can be told, as up to the present the development for male and female is identically the same.

The allantois, in reality a temporary blood-vessel, is formed on the fourth day, its purpose being to supply the blood with sufficient oxygen.

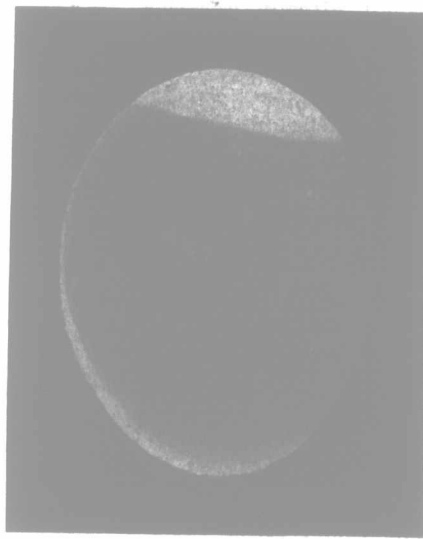
On the fifth day the head can be distinguished, with exceptionally prominent eyes, and there is a still further increase in size. The limbs can now be discerned quite plainly, though the wings and the legs appear the same. Traces of the knee and elbow can be seen at this stage.

With the close of the sixth day there are still further changes. It is at this stage that the specialization of the bird becomes apparent. The body is now formed, but the head and eyes remain enormously out of proportion. The white has now disappeared, its place having been taken by a thick brown liquid.

The seventh day marks the appearance of the liver and kidneys, and by this time the body is practically complete, though out of proportion, and exceedingly small.

On the eighth day the beak becomes visible, not as we know it, but quite soft and pliable.

When an egg has been incubated for seven days



4. At the seventh day a dark speck can be seen towards the broad end, from which blood vessels radiate. Observe the transparent air space.

it is customary to test it, in order to see whether it contains the germ of life, and whether that germ is developing in a proper manner. The operation of testing is an exceedingly simple one. The egg is placed before a lighted candle or lamp in a dark room, and so held that the line of light passes through the egg. In a fertile egg a dark speck can be observed towards the broad end, from which blood-vessels radiate throughout the entire contents (Fig. 4).

THE VALUE OF TESTING.

It is most advantageous thus to test an egg, as at the end of seven days, should it prove unfertile, it can be used for cooking purposes. Moreover, it is useless occupying space in an incubator with an egg that cannot hatch, when its place might well be taken by one that is fertile.

If the egg be again examined on the fourteenth