

day, a considerable change is noticeable. Owing to the development of the chicken within it is now quite opaque, save a very small portion at the pointed end. Of course, the air space, the white part of the broad end, is transparent, and it remains so throughout the entire period. The air space in a new-laid egg is quite small, but it gradually increases in size as the egg becomes older, until at the end of the sixteenth day it occupies about one-sixth of the contents of the space within the shell. The increase in size is due to the evaporation of the liquid portion, which is always going on through the holes in the shell already referred to.

By the ninth day the feathers commence to show themselves, but are contained in sacs which remain closed until the chicken has made its exit from the shell. The increase in size from the seventh day can easily be observed, also the large amount of space occupied by the yolk sac.

On the eleventh day the limbs have assumed their proper form, and upon the legs traces of scales are discernible.

The most noticeable feature of the twelfth day is that heat commences to be given off, owing to the fact that the blood-vessels are beginning to perform their work in a proper manner. After the eleventh or twelfth day there is much less danger of the chicken dying, as it is now practically a fully-formed bird. By the thirteenth day the nails assume their form, though three more days will pass before they become, together with the beak, quite hard.

When the egg has been incubated for fifteen days the chicken is perfect, differing only in point of size from one fully developed. Its form is now exceedingly visible, and the manner in which it is packed within the shell can be easily observed. The head is towards the broad end—the air space—and when this is not the case we get what is termed false presentation, and the probability is that the chicken will die in its efforts to free itself.

#### BREATHING BEGINS.

Assuming the chicken is to make its exit on the twenty-first day, on the nineteenth (Fig. 5)—that is two days previously—the allantois is snapped, and the chicken commences to breathe for the first time by means of its lungs. At this stage, if an egg be held up to the ear, a tapping noise may be distinctly heard, and it is frequently imagined that this is caused by the chicken attempting to pierce the shell. This, however, is not the case. It is merely respiratory, and produced during the expiration of the breath.

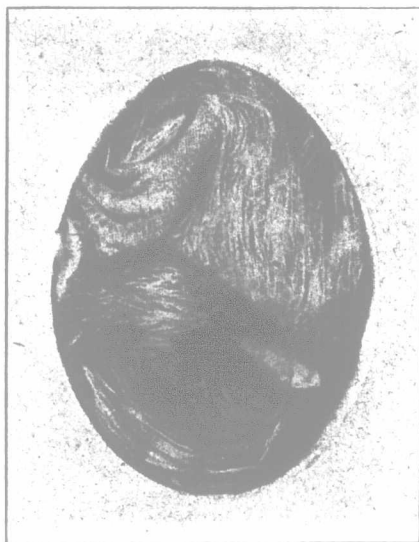
On the twenty-first day Nature has so far completed her task that, should the incubation have been successful, a fully-formed, well-developed chicken will be the result. Immediately prior to hatching, the remainder of the yolk sac—the part not already absorbed—is drawn up in the chicken's body, and thenceforth forms part of the intestines. It contains sufficient nutriment for the first twenty-four hours to thirty-six hours after hatching, and this explains why it is a mistake to feed chickens during the first day to day and a half after their exit from the shell.

When the chicken is ready to issue, the beak is turned towards the air space, which is pierced, and in a clean hatch this piercing continues right round the egg. When the circle is almost complete the chicken is able to free itself from its temporary prison. The beak is at first covered with a hard scale, but this drops off in the course of a day or two.

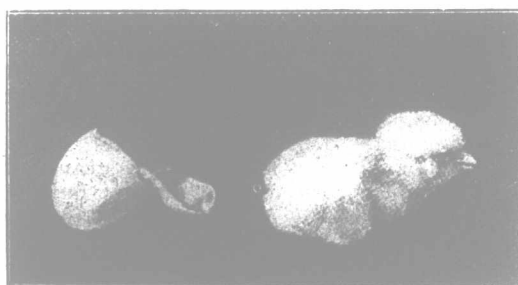
There is a custom in many parts of the country of tearing this away and forcing it down the chicken's throat, the idea being that a bird so treated can never have the gapes. This is arrant nonsense, and, more than this, it is gross cruelty, especially considering the fact that it will come off of its own accord in the course of a few days.—[The Country-side]

#### Cheap Clean Grit.

We are often advised to provide our fowls with clean food and clean water, but seldom is anything said about clean grit. Yet a box of soiled gravel and oyster shells is almost as uninviting as a trough of filthy water. The best way to keep it clean is to give only a little each day, emptying the box frequently. Villagers and others keeping but a few hens cannot do better than to provide grit material by pounding up pieces of crockery and china ware. The plan has three advantages: It disposes of a nuisance, it saves the expense of commercial grit, and gets the owner acquainted with his fowls—a very important point for best returns. The time, if valued at ordinary wage rates, would perhaps exceed the cost of purchased materials, but in the case of a small flock the enjoyment of the work compensates any lover of fowls. A block of wood and a hammer are the only tools required. There is no danger of any pieces injuring the birds, and no other grit is better than cheap, freshly pounded china.



5. On the nineteenth day the chicken commences to breathe for the first time by means of its lungs, and if the egg be held to the ear a tapping sound caused by respiration may be heard.



6. On the twenty-first day the chicken pierces the shell right round at the air space, and when the circle is complete frees itself from its temporary prison.

#### Shortage in Turkey Crop.

(Ottawa correspondence.)

There is a scarcity in the turkey crop in Eastern Ontario, and as a result high prices are likely to characterize the Christmas trade. Farmers state that there was great mortality among the young birds earlier in the season, which accounts for the shortage existing at present. Last year turkeys sold as high as twenty cents per pound on the Ottawa market at Christmas, and from the outlook at present it would not be surprising if even higher figures were reached this year. As much as eighteen cents per pound was paid at Thanksgiving for good turkeys, and there were scarcely enough birds offered to meet the demand. Of course, dealers may be able to secure supplies in Western Ontario, and in this way be in a position to keep prices down to the normal level, but if the Eastern Ontario crop has to be relied upon the householders are likely to pay dearly for the poultry they may require to grace the festive board at Christmas.

#### APIARY

##### Putting Bees in the Cellar.

The proper time for putting the bees in the cellar is governed largely by the weather. While they may sometimes be left on their summer stands until the middle of December, if the weather remains favorable, it is seldom advisable to delay putting them in much after the first of that month, and in most localities in this latitude it is generally better to get them inside about the middle of November, provided they have had an opportunity to fly freely within a week or ten days before that time. While it is not essential that they should have a flight just before being cellared, it is generally considered good for them to get out and have a chance to do a little house-cleaning and settle down comfortably before entering on their long sleep. If they fly about end of October they may be set in as soon thereafter as the weather gets bad, but if, as in the present season, in the writer's locality, they have been confined since near the first of October, they should be given a very close siege is liable to go hard with them, and it is not safe to figure on a spring flight before April 1st, and it is often ten days later.

If the bees are handy to the cellar they may be picked up one colony at a time and set by the side, but if at any distance from it it is better and easier to have a hand-barrow that will carry two or three hives, and an assistant to carry one end of it. A moonlight night, with a light of frost in the air, is a good time to do this work, and the bees have a good chance to settle.

have not been disturbed in any way for a couple of weeks before carrying in, for they are then so sound asleep that the operation is over before they get their eyes open. They should be handled as fast and with as little disturbance as possible, for if they get stirred up they will fly out and make trouble. Some beekeepers lift the hive off its bottom-board after carrying it in, and let it go barefoot all winter; but, with a shallow hive like the Langstroth, this is not always practicable, for, if the cluster be as large as it should be, there will generally be quite a respectable little family stuck to the bottom-board—too many to throw away—and the tearing off of the bottom of the cluster will make the bees "mad." The writer just sets the hive with its entrance towards the wall of the cellar, blocks the back up with a couple of inch blocks between the hive and the bottom, and puts a three-eighths-inch or so strip under the front of the cover to give upward ventilation (the hive should have a good quilt over the frames). Cushions on top of the hives, especially the bottom and top rows, are considered an advantage, but they make it hard to pile the hives up so they will be steady and not try to fall down. The top row may be cushioned without this disadvantage. The hives may be set about six inches apart in the rows, and the hives in the second and subsequent rows, either directly over the hives in the first row, or "straddled" so the middle of the hives in the second row are over the spaces between the hives in the first. This makes a firmer pile, but the number of hives in each row must be necessarily one less than in the row below it. However, this is a matter of convenience and habit, and does not materially affect the wintering of the bees. The cellar door may be left open until the weather gets too cold, unless a day comes warm enough to make the bees want to fly out, when it must be shut until the temperature drops again. The principal thing to watch for after the bees are in is the festive mouse. Keep him out with trap and poison, or he will make all kinds of mischief.

E. G. H.

#### NEWS OF THE DAY.

##### Canadian.

Seventy-eight municipalities of Ontario are now engaged in local option campaigns.

A fine statue of the late Sir Oliver Mowat has been erected in Queen's Park, Toronto.

Oil of very superior quality, and apparently of large quantity, has been struck on Manitoulin Island.

Margery, the eldest daughter of William Wilfred Campbell, the Canadian poet, was married recently to George Archibald Grey, a cousin of Earl Grey.

Rider Haggard says that there is only one portion of the British Empire where the white population was steadily and naturally increasing, and that is in the part of Canada settled by the French Roman Catholics.

One hundred and twenty Newfoundland reservists have joined the three British cruisers now at Halifax. The ships will have an 18,000-mile cruise, which will take six months, and during that time important British ports all over the world will be visited, to test their facilities for speedily supplying warships with coal.

According to Mr. S. Stewart, of the Indian Department, who recently took a trip up to James Bay, that body is gradually filling up, the water for miles out being quite shallow. The factor at Moose Factory told him that fifty years ago ocean-going vessels called at that place, but now the nearest they could get was Charlton Island, 125 miles distant.

Several Canadians are among the number of those who have received the King's birthday honors this year. Senator Gowan and Commodore Paget have been given the title of K. C. M. G. (Knight Commander of St. Michael and St. George); Lieut.-Col. Pellatt, of the O. C. R., has been created a Knight Bachelor; Major-General Lake, Mr. George Doughty and Dr. William Saunders have been made Companions of St. Michael and St. George. Dr. Saunders came from England to Canada in 1848. In 1880 he was appointed one of the commissioners to inquire into the condition of agriculture in Ontario, and in 1886 was made Director of the Dominion Experimental Farms.

##### British and Foreign.

It is rumored that M. Taigny, the French Minister to Venezuela, is preparing to leave the country.

See George Williams, founder of the Young Men's Christian Association, died in London, England, at the age of 84 years. He was knighted by Queen Victoria in 1884 for his services in behalf of the Association. He was buried in St. Paul's Cathedral.

A large number of women from the east end of London, who were waiting for a boat, waited a long