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THE CARE OF CHICKENS

By R. H. MORRIS, B.Sc. (Agric.), Officer-in-Charge, Poultry Branch.

The purpose of this article is to provide purchasers of young chickens with an outline of the procedures and problems associated with successful chicken raising, and perhaps to serve as a reminder to those poultry farmers who already have a good knowledge of the subject. The wide range of subject matter has made it necessary to present much of the material in a condensed form, and reference should be made to various departmental leaflets for an elaboration of many of the points mentioned in this article. The advisory service of the Department of Agriculture, Poultry Branch, is available to poultry farmers seeking information. Instruction on all matters relating to poultry husbandry will be freely given and visits to farms by field officers can be arranged.

Knowing how to rear chickens properly is the basis of successful poultry farming. It should always be remembered that the commercial chick is denied the maternal influence and depends entirely on artificial conditions for its well-being. It is the chicken's birthright to develop a sound, healthy body and eventually to lay an abundance of eggs or to produce a good carcass.

Although the majority of chickens in this State are reared correctly, each year sees the future of many thousands of our chickens spoilt during their early life owing to unfavourable environmental conditions, incorrect feeding and management.

Mismanagement in the crucial stages of growth and development is closely linked with poor productivity in later life. Provided that chickens are given a good start, they soon become hardy and self-reliant and need little attention beyond routine management, good housing and feeding. It is hoped that the advice given here will assist in reducing to a minimum the wastage of stock, time and money incurred through poor rearing practices.

THE BROODER HOUSE

The brooder house should be designed for protection against rain, cold and draughts and should retain heat within its walls with reasonable efficiency. As-
bestos is the most popular insulating material used for a brooder house, and sometimes the interior of the building is lined to retain warmth. Brick brooder houses also provide good insulation.

The brooding compartment should be well covered-in, particularly on cold nights, but ventilation is necessary at all times. Combustion fumes rising from certain types of brooders must have an outlet from the brooder house either at the top of the wall or through the roof, otherwise the brooder house may be filled with injurious gases.

Sunlight brings warmth and cheer into the house and as much as possible should reach the floor of the brooder compartment. Sections of the front and back walls should be fitted with glass louvres or other material for admitting sunlight. The wall facing away from the weather—usually the eastern wall in this State—should be well supplied with lighting and ventilation.

PREPARING THE BROODING COMPARTMENT

The compartment should be prepared several weeks before the chicks are introduced. Three to four inches of perfectly dry litter material, usually clean red sawdust or wood shavings, is placed on the concrete floor. Where there is a degree of fire risk—as in the case of charcoal brooders—a layer of dry sand could be used extending about nine inches out from the brooder.

The brooder is set in operation a day or so before the chicks are received, to warm up the litter and the surrounding atmosphere and to test the working efficiency of the brooder. A low wall of flat iron approximately 18 in. high is placed around the brooder in a circle at a distance of from 2 ft. 6 in. to 3 ft. 6 in. from the source of heat, depending on the amount of heat generated. When a hover type brooder is used the wall should be placed about a foot away from the edge of the hover and the circle enlarged as the chicks become brooder-wise. The guard ring prevents the day-old chicks from straying too far from the brooder and also shelters them from floor draughts. When the chicks are three to four days old, the area enclosed by the circle is further increased and usually by the end of the first week the iron is used only to round off the corners of the compartment to prevent the chicks from crowding into the angles of the wall and suffocating.

It is usually necessary to cover in any open parts of the walls or compartment partitions with hessian bagging or similar material to keep the compartment snug and warm. This applies particularly in the early stages of brooding and during the night. During the warm periods of the day, however, the compartment should be opened up to let in as much direct sunlight as possible.
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BROODER HOUSE
EQUIPMENT

Brooder

The type of brooder used is not important provided it produces adequate heat.

Make frequent observations of the behaviour of the chickens to determine if a comfortable brooding temperature is being maintained. If they are spread evenly around or under the brooder they are comfortable. If they huddle close to the source of heat, they are too cold; if they press hard against the guard wall they are too hot. Make sure that the chickens are eating and drinking at the proper times. Check their behaviour about 6 a.m. when the lowest atmospheric temperatures are reached, as that is when most chilling occurs.

Various brooding systems are used according to the convenience of operation, the type of housing, and the size of the unit. The most commonly-used floor brooders in this State are kerosene burners, infra-red ray lamps, electric, charcoal and hot water brooders.

Kerosene Brooders:

It is important to check the temperature of the brooder at a point 2 in. above the surface of the litter and midway between the source of heat and the outside edge of the hover. The thermometer should record 95°F to 100°F. for the first three weeks and thereafter the temperature can be decreased by 5° to 10°F. each week until the heat is dispensed with at five or six weeks of age. To avoid explosions, the bowl of the lamp should never be more than three-quarters full of kerosene. Fumes from the burner must have an outlet at the top of the compartment.

Infra-Red Ray Lamps:

Where infra-red ray lamps are used, it is a good idea to light and hang a hurricane lantern in the brooding compartment in case of a power breakdown. This prevents any undue panic which may occur if the brooder house is suddenly plunged into darkness.

It may be necessary to lower the infra-red ray lamp to a height of 10 in. above the litter in order to obtain sufficient heat. Usually however, the bottom of the lamp is placed 12 in. to 14 in. from the surface of the litter and, should insufficient

Fig. 2.—A batch of six-weeks-old chickens is snugly bedded down for the night behind the bagging curtain shown in the top picture. The bags which form a cold brooder, are attached to the permanent perches installed 12 in. above the platform. The bags forming the roof extend to within 18 in. of the sides of the shed and 9 in. of the back wall. The hanging curtain is 2 in. to 3 in. from the platform.

(Below)—By lifting the front bag, half of the chickens may be seen in position. Note how they occupy the central portion of the platform. By appropriately arranging the bags, the chickens may be effectively discouraged from crowding into the corners of the platform or on to the back protective board. Note the sloping protective boards at each side of the platform.

At seven weeks of age the top bags will be removed, and the front bags will be taken away a week later.
get the chicks eating. Within three days the food consumption shows a significant increase and the chicks are ready for trough feeders. A standard type chicken trough 4 in. wide, 2 3/4 in. high, and 2 ft. 7 in. long with a 1/2 in. lip and an anti-perch roller 1 1/2 in. above the trough can be easily and economically made from a strip of 26-gauge galvanised flat iron measuring 36 in. x 10 in. Wooden troughs of light timber can be similarly constructed. Three troughs of this type would serve 100 chicks to four weeks of age. It will be necessary to sink the bottom of the troughs an inch or so in the litter until the chicks are big enough to reach the mash. As the chicks get older, more trough space should be provided, either by adding more troughs or by using a larger model.

A suitable trough to use during the 5 to 13 week-old stage can be made from a strip of flat iron measuring 6 ft. x 1 ft. 6 in. The bottom of the trough is 7 1/2 in. wide, the sides are 4 in. high with 1 1/2 in. lips (the 1/2 in. being turned downwards), and the length is 6 ft. if ends cut from a separate sheet are used.

Pieces of 8-gauge wire or conduit are placed across the trough and spaced 2 3/4 in. apart. The wires are pushed through holes drilled in the lip and bent back underneath the lip.

At 13 weeks of age a full-sized trough, suitable also for laying birds, should be provided. This is a slightly larger version of the previous type, the dimensions being: bottom 14 in. wide, sides 6 in. high, lips 2 in., length 6 ft.

Waterers.

Watering fonts for young chickens should be distributed around the perimeter of the area enclosed by the iron guard and in between the feeding troughs. The fonts can be placed on flat boards or wire platforms. This arrangement keeps the drinking water reasonably free from contamination by droppings and litter material, and damp patches of litter and slop are avoided. Four fonts will serve 100 chicks up to four weeks of age. A changeover to automatic watering vessels can be made gradually when the
The actions of the chicks will soon let you know whether the correct brooder temperature has been achieved. If they are distributed evenly under the hover and at the hover's edge, they are comfortable and happy (A). When they huddle together under the hover (B) they are too cold.

Floor draughts may be suspected when they huddle in a group (C). If they get as far away from the hover as the floor-space allows, (D) the heat is excessive.

chicks are about one week old; the sooner the better, as this will mean a considerable saving in labour. To reach the automatic waterer the chicks should walk over a slatted platform built outside the front wall of the compartment.

**SIZE OF UNIT**

Usually less trouble arises when chicks are reared in small units. Under average conditions rearing results have favoured units of approximately 150 chicks. Where a large number of chickens are housed
FIG. 5.—The diagram shows suitable hover temperatures for chicks of various ages.

Together in one compartment, not only is there a tendency towards overcrowding as the chicks get older, but unless they are subsequently divided into smaller groups, it is very difficult to teach the chickens to perch at an early age. A heavy infestation of coccidiosis is more likely to occur and is more difficult to control in a larger unit, particularly if there is some defect in the management. In fact, most problems associated with chicken rearing are usually accentuated in the larger sized units. Overcrowding of chickens either in the brooding or rearing stages can have disastrous effects and the attendant should keep a check on the amount of space allowed each chicken.

Minimum Shed Floor Space Required Under Semi-intensive Conditions:
- 0-5 weeks—\( \frac{1}{4} \) sq. ft. per chicken.
- 6-12 weeks—\( \frac{3}{4} \) sq. ft. per chicken.
- 13-20 weeks—1\( \frac{1}{4} \) sq. ft. per chicken (plus free range).

Minimum Feeding Space for All Dry Mash Feeding:
- 1-4 weeks—12 ft. per 100 chickens.
- 5-10 weeks—16 ft. per 100 chickens.
- 11-20 weeks—24 ft. per 100 chickens.
- Laying birds—30 ft. per 100 birds.

Minimum Watering Space:
- 1-4 weeks—4 fonts per 100 chickens.
- 5-20 weeks—2-3 ft. per 100 chickens.
- Laying birds—4 ft. per 100 birds.

Perching Space:
As the chickens become older and more perching space is required, extra perches are provided.
- 9-12 weeks—35 linear ft. per 100 chickens.
- 13-20 weeks—40-50 linear ft. per 100 chickens.

FEEDING
During the first 24 hours after hatching the chicks' main requirements are warmth and drinking water. After this time, a small amount of "starter" chick mash containing a minimum of 16 per cent. crude protein should be provided, first on paper and then in shallow trays placed in close proximity to the brooder. Within three to four days, the mash troughs previously described can be introduced. Chickens should never be without food.

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15 per cent. protein is fed, this being reduced to a 14 per cent. level at 13 weeks. The protein remains constant at 14 per cent. from 13 weeks until the pullets lay their first egg, at which time the protein should be increased to a 16 per cent. level. A good flock of first-cross pullets will commence laying when 20 weeks of age.

Buttermilk powder, because of its relatively high protein and riboflavin content, is an excellent foodstuff for chickens and a 4 per cent. level in the ration is recommended until the chickens are six weeks old. From this time, to reduce feeding costs, the quantity of buttermilk in the ration is gradually decreased until it is excluded at the twelve week-old stage.

Note: Ration No. 5 can be used when mill offal is scarce. Barley can be substituted for part of the wheat and oats in the above rations on a pound for pound basis. Whalemeal can be substituted for meatmeal on the basis of 5 lb. of whalemeal for 6 lb. of meatmeal.

If whole grain is fed in addition to these mashes, extra meatmeal must be included in the mash.

**Chicken Ration 8-12 Weeks:**

In each of the above rations reduce both the buttermilk powder and the meatmeal by 2 lb.

**Growers Ration (13 weeks to point of lay):**

In each of the chick mashes listed above omit the 4 lb. of buttermilk powder and reduce the meatmeal by 3 lb.

It is essential that vitamins A and D₃ be included in the mash at the correct level. Normally vitamin D₃ can be omitted from the ration after the first 4–6 weeks but a vitamin A supplement should be fed in the mash continuously. The inclusion of antibiotics in the “starter” chick mash can be beneficial.

Natural herbage or chopped-up, succulent greenfeeds such as lucerne, kikuyu grass or cereals should be provided from one week of age onwards.

One-eighth “all-in” metal dust placed in a shallow, easily-accessible trough in the brooder compartment will enable a better utilisation of food by the chicken by helping the gizzard to work more effi-
ciently. A change to one-eighth screened metal dust can be made when the chicks are ten weeks old as by this time the larger grit particles will prove more beneficial. More detailed feeding information will be found in Departmental Leaflet No. 995.

**LITTER MANAGEMENT**

After the first two or three days of brooding, the litter underneath the brooder should be inspected and if there are signs of dampness or droppings accumulating on the surface, a light application of hydrated lime followed by forking-in will maintain the litter in a dry state. It may be necessary to replace the damp litter underneath the brooder with dry material from another area of the compartment. It is essential that a dry litter be maintained at all times.

**TEACHING CHICKENS TO PERCH**

The transition period from floor brooding to perching is a vital phase in the chick’s life and can be a strenuous and exasperating period for the farmer. Mismanagement at this crucial stage is, in many instances, the underlying cause of poor results later on.

The problem should be approached methodically to achieve success with a minimum of effort. The procedure of teaching chicks to perch with the aid of a perching platform is contained in a Departmental leaflet on this subject.

**LETTING THE CHICKENS OUTDOORS**

When 10 to 14 days old, depending on the weather, the chicks are allowed out into a small run for a few hours after 10 a.m. on a warm, sunny day. The period is extended as the birds become harder and more vigorous until by about three weeks of age the door to the run is left open all day, providing the weather is not too boisterous.

Fresh ground planted to a green crop such as rape should be provided for the young chicks. At first, most of the run is hurdled off so that the chicks are allowed only a small area. As they become older and more vigorous the area is increased by shifting the hurdle further back. In this way, the chicks are given access to a fresh area of greenfeed each time the hurdle is moved. Usually about five square feet of run is allowed each chicken up to nine weeks of age, when the gates to the runs are opened and the birds are free-ranged on open grassland. Free range not only provides natural nourishment to the stock but also enables the growing birds to develop healthy robust bodies. Bare ground provides little benefit to the chickens. As a guide, about 500 growing stock up to the laying stage can be ranged on an acre of land.

**GRADING YOUNG STOCK**

It is necessary to grade young stock in order to obtain a harmonious relationship between individuals in a group. Variations in body size and vigour soon become apparent in growing stock and differences in social status are established.

Unless the flock is graded into equal class groups, the slow-developing individuals are unable to compete against, and are eventually oppressed by, the more advanced chickens. At the six-week old stage it is not unusual to have a certain number of backward chickens in the flock, but this does not necessarily signify a fault in management as differences in growth rate and development can be expected in most flocks.

However, to avoid retarding the development of these birds it is essential to segre-
gate them from the flock and the importance of this management practice cannot be over-emphasised.

When housed as a separate group, the backward chickens appreciate the freedom from interference by the more advanced birds and within a few weeks their development is noticeably improved—indeed in many cases where grading is carried out early in life, the backward birds soon catch up to their more advanced companions. The free ranging of young stock reduces bullying or "bossism" to a minimum thus promoting even development.

The flock should be graded before being housed in the laying quarters as marked differences in the rate of sexual development frequently exist between individuals.

The practice of grading the birds according to precociousness contributes greatly towards reducing the number of culls which subsequently develop in the laying flock.

CHICKEN AILMENTS

Omphalitis (or Navel Infection).

This disease is sometimes encountered in very young chicks with most losses occurring during the first three to four days of brooding. The ailment frequently originates in the hatchery. It occurs when the navel opening does not heal properly and infection of the navel and yolk sac results, more generally under unsanitary conditions. Affected chicks are drowsy, the abdomen is puffed or mushy and there may be inflammation around the navel. A post mortem examination generally shows an abnormal yolk sac containing more fluid than usual with a putrid odour. There is no treatment for affected chickens, but the infection can usually be controlled by exercising strict sanitation in the incubator and hatchery. Although omphalitis in young chickens is fairly widespread, losses through the disease are not heavy.

New drugs have come to the assistance of the poultry farmer in combating coccidiosis. Nitrofurazone or sulphaquinoxaline administered through the drinking water as recommended by the manufacturers usually achieve excellent curative results.

Affected chickens should be kept warm. The caecal form of the disease frequently strikes when the chickens are about to be weaned from artificial heat and in such circumstances the brooder can well be used for a further week or ten days until the attack has subsided. Heavy mortalities are more likely to occur if the chickens are allowed to crowd in corners during the night. A perching platform and night lighting will prove of assistance under these conditions.
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Pullorum Disease.

At one time this was a very prevalent disease of young chickens, being transmitted from parent stock to the progeny through the hatching egg. By using hatching eggs obtained from pullorum-free breeding stock the incidence of the disease in chickens has been reduced to negligible proportions in this State. Most deaths occur during the first 14 days, and losses are usually heaviest about the fourth or fifth day. The birds appear dull and listless, have drooping wings and they do not feed or drink. In a number of cases a white diarrhoea frequently pastes up the vent.

Chilling.

The external appearance of chilled chickens closely resembles that shown by those affected with pullorum disease, but chilling is a far more common cause of chick losses than pullorum disease. Regular attention should be given to the warmth provided by the brooder and should losses occur, a check on the chickens’ behaviour should be made during the early hours of the morning before a complaint is lodged with the supplier of the chickens.

Cocciidiosis.

The most prevalent disease of chickens in W.A. There are two forms of the disease, both having characteristic symptoms

_**Cæcal Form:**_ Outbreaks occur mostly during the brooding period and frequently when the chicks are four to eight weeks of age. The external symptoms are a dejected huddled appearance, feathers ruffled, wings drooped, blood passed in the droppings. An internal examination usually shows the cæca to be filled with blood. Usually, varying degrees of infection are evident.

_**Intestinal Form:**_ Often occurs as a secondary outbreak at a later stage, usually when the chickens are 8 to 14 weeks of age. Although the entire group may be affected, it is frequently confined to a small proportion of the chickens. The outward symptoms are similar to those due to _cæcal_ coccidiosis except that blood seldom appears in the droppings.

**Prevention:** Keep a strict check on sanitation, particularly by maintaining a dry litter, as this will greatly assist the chickens to build up a natural immunity or resistance against an outbreak of the disease. The damp soil outside provides an ideal source of infection but if hygienic runs are provided, these will help minimise the extent of infection.

**Cure.—**Treatment with either sulphaquinoxaline or nitrofurazone in the drinking water is a very effective cure, providing the treatment is commenced as soon as the symptoms are sufficiently specific to diagnose the disease. The directions for using these medicines should be closely...
adhered to. Having cured the disease, Lugol's solution may be found helpful in returning the chickens to a really robust state of health. Lugol's solution consists of two ounces of potassium iodide and one ounce of iodine crystals dissolved in one pint of water. This stock solution is added to the drinking water at the rate of one teaspoonful to each gallon of drinking water. Lugol's solution can be given for one fortnight immediately following the treatment with sulphaquinoxaline or nitrofurazone.

**Vitamin A Deficiency.**

The condition is commonly referred to as nutritional roup. Where a vitamin-A-rich supplement is included in the ration at the required level this deficiency should never arise. Fish oils used as a vitamin A supplement should be fresh and should not be fed through the drinking water as their potency is considerably reduced on exposure to air. During the brooding period a vitamin A and D₃ supplement should be fed, as the chickens receive only a limited amount of direct sunlight while in the brooder house. A deficiency of vitamin A predisposes the stock to other maladies such as worm infestation, chicken pox, coryza, etc.

**Leg Weaknesses.**

Specific leg weaknesses must be distinguished from leg weaknesses often associated with the diseases already mentioned. Some forms are due to a mineral or a vitamin deficiency in the diet or to the inability of individual birds to assimilate these nutrients. Rickets, curl toe paralysis, and leg weaknesses caused by a dietary deficiency or an unbalanced supply of minerals required for bone formation are dealt with in Departmental Leaflet No. 995 entitled "Nutritional Requirements of the Domestic Fowl."

**Leucosis.**—One form of leucosis known as fowl paralysis is typified by lameness and frequently occurs in growing stock approaching the lay. Affected birds, which may in other respects look well-grown and healthy, lose the use of one and sometimes both legs and the toes become folded in.

The disease is believed to be caused by a virus but there is no curative treatment. Preventive measures revolve principally around sanitation and the strict isolation of young chickens from adult birds.

**Tick Fever.**—This is another disease of growing and adult birds causing leg paralysis. It is often not realised that the birds are ailing until they suddenly lose the use of their legs. Before this happens certain symptoms may be observed, namely, loss of appetite, feverishness, a darkening of the tips of the comb and the voring of a bright green-coloured or sometimes whitish droppings. Death may ensue within a few days of the appearance of these symptoms, but such birds as recover acquire a degree of immunity against the disease.

Tick fever is caused by a parasitic organism transmitted by both poultry tick and red mite. Control of these two pests will prevent the spread of the disease through the flock. (See Departmental leaflet for control measures.)

**Worm Infestation.**

The intestinal round worm is the most common type of worm affecting poultry flocks in this State. Serious infestations are usually apparent late in the growing stage and often when the pullets approach the lay.

**Prevention and Control Measures.**—Provide chickens with fresh ground which has been exposed to the hot sun, well

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**Fig. 10.**—The reward of good chick rearing.
limed and planted to crop. Avoid damp litter, particularly around waterers. Routine deworming of the young stock at ten weeks and again at eighteen weeks of age is strongly recommended, preferably by drenching with carbon tetrachloride or, where only a small number of birds are kept, by using deworming capsules.

**Chicken Pox.**

This is another prevalent disease of poultry, outbreaks being more frequent in young stock from about 16 weeks of age onwards. Sanitation and purchasing chickens "in season" usually prevent the disease occurring before the birds are old enough for vaccination. All young stock should be vaccinated at 12 weeks of age and certainly not later than 16 weeks of age.

For success with chickens none of the measures recommended above should be neglected whether the number of chickens being reared is large or small. A little extra care and trouble taken to follow these instructions will be amply repaid, for a good start is more than half the battle.

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