

*Electric*

# CHICK BROODER OPERATION

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# ELECTRIC CHICK BROODER OPERATION

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Brooding with electricity is becoming increasingly popular with the spread of rural electrification. To meet a need for information on that subject, this bulletin has been prepared. The practices recommended are based upon the results of 8 years' work at the Michigan Agricultural Experiment Station and the reported experiences of more than 300 users of electric brooders throughout Michigan.

The properly constructed electric brooder gives a more uniform temperature under the hover than any other type of brooder; it requires less labor and worry; and, the fire hazard is virtually eliminated, especially where no auxiliary heat is needed. Electric brooding is cold room brooding—that is, only the area under the hover is heated. Cold room brooding requires operation procedures different from those practiced in warm room brooding. Adoption of the electric brooder does not necessarily insure successful brooding for one who has not succeeded with other types.

## CHOICE OF ELECTRIC BROODER

The electric brooder is primarily a heat trap; therefore, insulation is necessary to obtain economical operation. The insulation should consist of at least  $\frac{1}{2}$  inch or the equivalent, of standard insulating board. The brooder should be of sturdy construction—more than just a piece of sheet iron under which has been fashioned some electrical heating device. Provision must be made for circulating air after it is heated, either by fan or natural draft. Provision must also be made for removing foul, moisture-laden air without losing too much heat. Heating should be uniform and controlled automatically by a thermostat located near the chicks' backs. The heating capacity should be approximately 2 watts per chick.

To insure satisfactory operation, the wires supplying current to the brooder house should be inspected to determine if they are as large as recommended in Table 1, especially if the brooder house is more than 75 feet from the electrical outlet.

Electric brooders should be used at rated capacity, provided capacity is based on 10 square inches per chick *when brooder is used prior to March 15*, and 7 square inches per chick *after March 15*. The heavier breeds require a slightly greater area. Ten square inches per chick is recommended in cold weather because the chicks spend more time under the

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Table 1. Size of wires recommended to carry 110-volt current to electric brooders.\*

Size of Wire (gauge)	Maximum Allowable Distance in Feet from Electrical Outlet to Brooder House When Wattage of Brooder Is:				
	440	660	800	1000	1200
14.....	165	115	90	75	65
12.....	250	175	140	115	100
10.....	375	250	210	170	145
8.....	625	450	375	300	260
6.....	900	675	560	470	410

\*"Carrying Capacity of Wires," Dept. Series Bul. No. 3-4530, Agricultural Engineering Department, Michigan State College.

hover at that time. Exceeding the capacity of the electric brooder means crowding of the chicks, which results in higher mortality. Operating the electric brooder at less than capacity is inefficient use of electricity and equipment but is a far more desirable situation than the crowded brooder. Table 2 gives chick capacity for the common sized electric brooders.

Chick capacity of the electric brooder should not exceed the chick capacity of the brooder house in which it is used. For example, a 10' x 12' house has a capacity of 240 chicks, allowing 1/2 square foot per chick. For brooding in the 10' x 12' house prior to March 15, the 48" x 51" rectangular or the 56" round or hexagonal brooder (Table 2)

Table 2. Capacity of electric brooders.

Brooder Dimensions in Inches	Chick Capacity Prior to March 15 (10 sq. in. per chick)	Chick Capacity After March 15 (7 sq. in. per chick)
22 x 24.....	55	75
40 x 40.....	160	225
48 x 48.....	230	330
48 x 51.....	245	350
48 x 60.....	280	410
48 x 72.....	350	500
50 x 50.....	250	355
54 x 54.....	290	415
60 x 60.....	360	515
44 (round or hexagonal).....	150	220
52 (round or hexagonal).....	210	305
56 (round or hexagonal).....	250	350
58 (round or hexagonal).....	260	370
67 (round or hexagonal).....	350	500



is indicated, while for brooding after March 15, the 40" or 44" round or hexagonal brooder is indicated. However, if additional space, such as summer shelter, is available, the 48" x 51" rectangular or the 56" round or hexagonal brooder may be used to brood its warm weather capacity of 350 chicks after the weather becomes warmer.

### STARTING THE ELECTRIC BROODER

The brooder should be set in place and operated for at least 12 hours before the chicks are placed under the brooder. This will warm the litter and give the operator time to regulate the heat and check the reliability of the automatic control. It is essential that the temperature is well regulated before the chicks are placed under the brooder. The curtain should touch the floor for the first few days.

### BROODER TEMPERATURE

It is most important for the chicks to be comfortable. A temperature of 95° F. is suggested as a good temperature at which "to start" chicks. Many operators find it more satisfactory to be guided by the action of the chicks than by the brooder thermometer. If the brooder temperature is too low, the chicks will "bunch up" under the brooder and refuse to come out; but if the chicks crowd near the curtain or refuse to go under the brooder, they are not comfortable under the brooder because of too high a temperature or insufficient ventilation. If the chicks avoid a particular area under the brooder, this indicates either uncomfortable temperature or a draft at that place. Never maintain the brooder temperature any higher than is necessary to keep the chicks well distributed under the brooder. Many operators prefer to maintain a slightly higher temperature during the day so that the chicks are warmed in a few minutes and will hurry out to feed. Do not adjust temperature by adjusting height of brooder. As the chick grows and needs more head room, the height of the brooder should be adjusted to the chick's comfort.

If the operator undertakes to be guided by the brooder thermometer, he should follow the manufacturers' instructions very closely. A standard thermometer held *at the chick level and at several places under the hover* should be used to check the reading of the brooder thermometer.

Do not attempt to regulate temperature immediately after brooder has been lifted, litter replaced or raked over, or while brooder house door is open. When brooder regulator is once set, do not change it when weather changes occur. After a little experience, the temperature regulator can be quickly adjusted to increase temperature during the day and reduce it in the evening.

### ELECTRIC BROODING IN THE PERMANENT HOUSE

The same objection applies to the use of the electric brooder in the permanent house as applies to other types of brooders—the problem of sanitation. When the electric brooder is used in the permanent house, careful cleaning of the house, and management and care of the yards will help to avoid disease.

## ELECTRIC BROODING IN THE PORTABLE BROODER HOUSE\*

The portable brooder house may be placed conveniently near other farm buildings or in a protected spot, since there is little fire hazard with the electric brooder. It is not necessary to locate the portable brooder house in a permanent position. The electric wiring may be so arranged that the building may be moved when desired. When the brooder is no longer needed, the wires can be disconnected and the house moved to a distant location. Possibly the local power company farm service adviser will be glad to help arrange the wiring most advantageously.

The portable type house may be permanently located and still maintain some of the advantages of the portable house, provided a program of sanitation is carried out.

### INSULATION IN BROODER HOUSE

If the brooder house is free from drafts, then insulation in the brooder house is not necessary or warranted for normal season brooding.

The floor should be free from drafts. It is desirable to set the hover on a piece of insulating material slightly larger than the hover. Side walls should be tight. Use boards, cardboard, or paper to make walls tight to a height of at least 18". Put a wide board across door opening.

### LITTER

The entire brooder house floor should be covered with 1" to 2" of litter. Peat moss is preferable; other litters in order of desirability are: commercial litters, shavings, and ground corn cobs with the fine material sifted out. Straw, hay and chaff are not recommended because they tend to pack and droppings cling to straw and, thus, do not become properly buried. Despite the objectionable features of straw, it is widely used. If straw litter is used, its condition must be frequently inspected.

It is essential that the litter under the hover be kept in a condition to serve as insulation and to absorb moisture. The litter should be stirred and raked over every day and replaced when damp or dirty. Remove the chill from fresh litter which is to be used for small chicks in cold weather by placing the litter in a warm room a day before it is to be used. Keep litter away from brooder heating element. Work of caring for the litter can be made easier by attaching a rope and counterweight to the brooder so that it can be lifted high enough to permit working underneath. By using two pulleys, the counterweight can be placed out of the way.

\*See Extension Bulletin 236, "Portable Brooder Houses for Michigan," Michigan State College, East Lansing, Mich.

### THE CORRAL

A board, pasteboard or metal ring should be placed around the brooder and 12 inches away from the brooder. This corral should be at least 8 inches high. This will keep chicks from wandering away from brooder and getting lost and will also tend to prevent drafts. A corral made of hardware cloth will not prevent floor drafts. The corral is gradually moved out, and within a week or so may be removed from around the brooder and placed so that the chicks cannot pile up in the corners of the brooder house if frightened.

### FEEDING\*

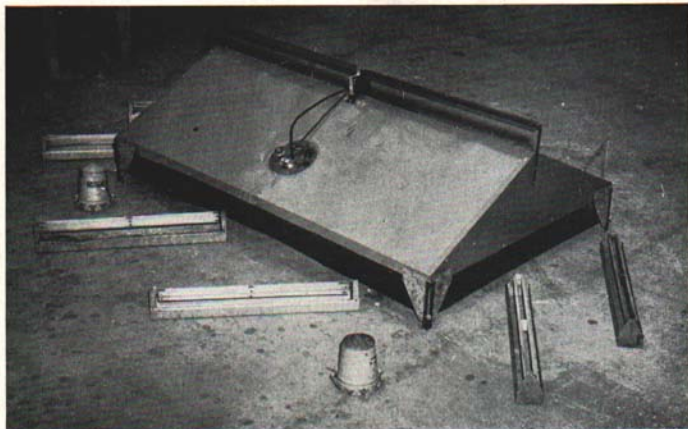
For the first few days the feeders should be placed under the brooder, or food may be sprinkled on papers or on paper plates under the brooder. The feeders are placed toward the center of the brooder, like spokes in a wheel (as shown in Fig. 1), and when *all* the chicks have learned to eat, the equipment may be gradually moved out (Fig. 2).



*Fig. 1. For the first few days one end of the feeders are placed under the brooder.*

\*For information on feeds, see Extension Bulletin 52, Michigan State College, East Lansing, Mich.





*Fig. 2. The feeders are gradually moved away from the brooder.*

### **WATERING**

Place fountains at the edge or under brooder if possible for the first few days. Remove them from close proximity to brooders as soon as possible; however, fountains may be kept from freezing by placing them against the edges of the brooder. Supply plenty of water.

### **VENTILATION OF THE BROODER HOUSE**

Because electric brooding is cold room brooding, special attention must be given to ventilating both the brooder house and the electric brooder to prevent an excess of moisture. The brooder house ventilators should be closed at the beginning and opened gradually. The moisture and condition of the air should be the guide to the amount of ventilation required. The air should "smell clean." Openings low enough to cause floor drafts should not be used for ventilators.

### **VENTILATION OF ELECTRIC BROODERS**

Ventilation of electric brooders is necessary to prevent moisture from the breath and droppings of the chicks from accumulating under the hover. With both the natural draft and the fan type brooders, the ventilators should be closed, or just slightly opened, for the first few days. After that, the condition of the litter should determine how far the ventilator should be opened. The opening should be larger at night as more chicks are under the hover at night.

## NIGHT LIGHT

After the chicks have been under the brooder 3 or 4 days, a night light is desirable so chicks can feed and drink at any time. Use at least a 25-watt lamp for each 200 square feet of floor space.

## TEACHING THE CHICKS TO ROOST

When chicks are three to four weeks old, and also depending somewhat on the weather, they should be encouraged to roost. This can be done by building a low roost at the rear of the brooder house. The roost should be made from lumber 1" x 4" or 2" x 4" laid flat and should be rather low. Another method is to place a low roost under the brooder. In either case, it may be necessary to wean the chicks from the brooder after six or seven weeks by raising the brooder several feet above the floor.

A good coat of floor wax will aid in keeping the chicks off the brooder.

## POWER INTERRUPTIONS

In case of a power interruption the ventilators should be closed and the hover lowered. If interruption occurs when chicks are only a few days old or if the weather is extremely cold, several jugs or fruit jars filled with hot water and placed under the hover will supply heat.

## DAILY CARE OF CHICKS AND EQUIPMENT

1. Fill fountains and feeders.
2. Elevate brooder and rake over, stir, or replace litter.
3. Adjust brooder legs as chicks grow and need more head room.
4. Check brooder house ventilation.
5. Observe chicks under brooder. Action of the chicks indicates whether they are comfortable.

*Title page illustration, courtesy of Detroit Edison Company.*