# NEW ELECTRIC LAMP BROODER

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The new electric brooder to be described was designed and first used by this Station in October 1940. During the meantime, five of these brooders have been in almost continuous use. They have been used successfully for starting and brooding chicks throughout the year and for summer brooding of poults. This type of brooder was designed and is operated upon the basic principle that chicks or poults can be depended upon to adapt themselves readily to their heat and air requirements when ample heat and air are provided. This contention has been substantiated by the extensive use of these brooders throughout the year under widely varying conditions. In all instances, satisfactory results were secured with these simple, inexpensive brooders. At no time was there noticeable evidence of a need for thermostatic heat regulation, additional ventilation, or other items that would make these brooders more complicated and more expensive.

The new electric lamp brooder –

- Involves a minimum use of metals needed for war purposes.
- Weighs about 30 pounds without insulation material.
- Accommodates 150 to 250 chicks when made 4 by 4 feet or 250 to 300 chicks when made 4 by 6 feet.
- Is operated on the basis of the behavior of and comfort of the chicks rather than thermostatic heat control or temperature shown by thermometer. Thermostatic heat control is unnecessary, since the chicks readily adapt themselves to their heat requirements and comfort in a brooder of this kind. A thermometer is misleading rather than helpful, since the ordinary thermometer can not be depended upon to indicate the radiant or infrared heat requirements of chicks or poults.
- Has a wide range of heat supply for special brooding requirements throughout the year.
- Requires no curtains during usual brooding conditions. In severely cold weather, curtains may be needed to conserve heat or prevent floor drafts; otherwise, curtains should not be used.

Electric lamps have recently become available which offer new opportunities for brooding chicks and baby turkeys. These lamps are available in two types, 150-watt projector or reflector spot or flood lamps and 250-watt R-40 Bulb Drying Lamps, all of which project infrared or radiant heat rays, as well as light rays. The projector lamps are made of heavy glass and can be subjected to cold, rain, or snow when burning, whereas the less expensive reflector lamps, made of thin glass, are liable to crack if subjected to water while burning. [Note: The authors are talking about outdoor vs. indoor floodlights and spotlights, and the distinction is still true today.] The projector and reflector lamps have a life rating of 1,000 or more hours, and a longer life can be secured by using 120-volt lamps on a 110- to 115-volt circuit. The 120-volt lamps generally serve for two brooding periods. The 250-watt R-40 Bulb Drying Lamps [heat lamps] have a much longer life rating, 5,000 or more hours.

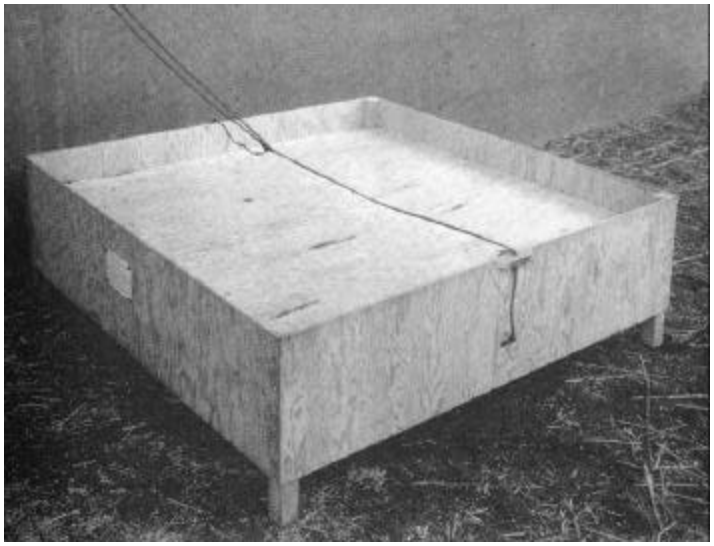

**Figure 1. A 4 by 4-foot hover.**
**Note 4-inch space on top for insulation material**

The satisfactory use of such lamps for converting batteries without heating elements into battery brooders suggested using them for floor brooders. In both types of brooders, the lamps were placed in a horizontal position to project the heat and light across the hover rather than downward.

The floor brooding hovers designed and used extensively by the Ohio Agricultural Experiment Station are simple, inexpensive, and easily made of plywood or pressed wood. The sides are 12 inches wide and extend four inches above the top to provide ample space of the fine litter-insulation material (fig. 1). Desirable insulation materials are finely ground corncobs, shavings, sawdust, or fine peat moss. With this type of hover, unlike most, the chicks are encouraged to roost on top of the brooder. After the first 2 weeks, they take to the top during the daytime and thus leave more room for those remaining on the floor (fig. 2). The bottom edge of the hover is 4 inches above the floor. Side curtains can be sued when needed during severely cold weather. If there are floor drafts, a curtain can be used on the one or two exposed sides.

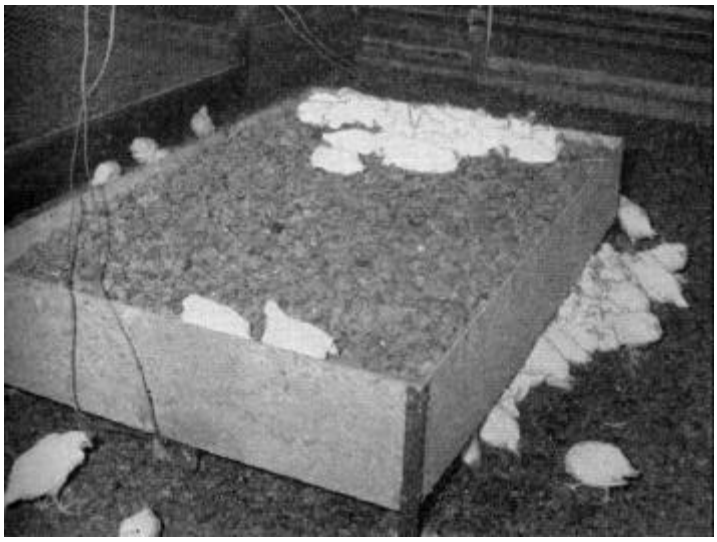

**Figure 2. Some of the chicks take to the top of the hover.**

The hover may be made 4 by 4 feet for 200 to 250 chicks or 4 by 6 feet for 250 to 300 chicks. The lamps are placed in a horizontal position in the center of opposite sides of the 4 by 4-foot hover or in the center of the ends of the 4 by 6-foot hover so that the center of the porcelain lamp socket is 3 inches above the bottom edge of the hover (fig. 3).

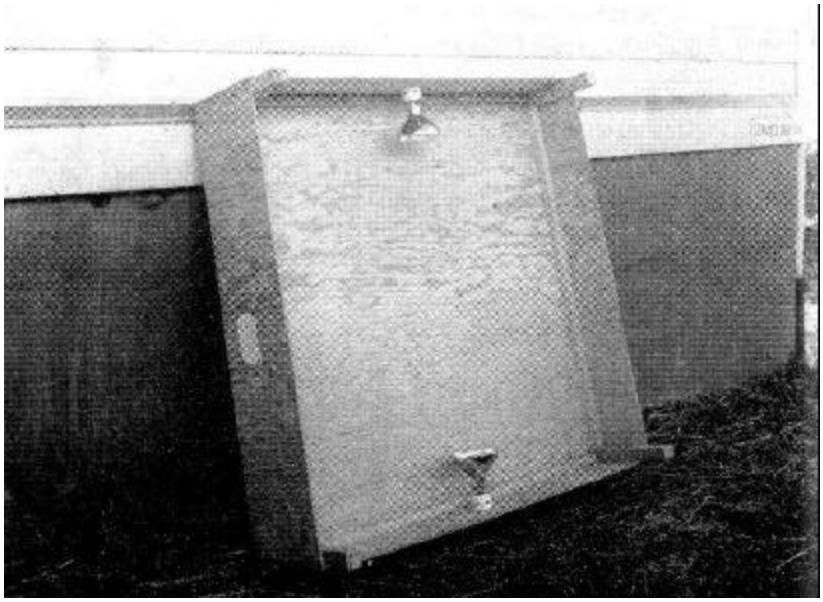

**Figure 3. Inside of a 4 by 4-foot hover equipped with two lamps.**

The following materials are needed for a 4 by 4-foot brooder:

- One piece of 4 by 8-foot, ¼-inch plywood or 1/8-inch pressed wood (to be cut into one 4 by 4-foot top and four 1 by 4-foot sides)
- Four cleats 1 inch by 1 inch, 4 feet long, to which the top and sides are nailed.
- Four pieces of 1 ½ by 1 ½-inch lumber, 16 inches long, for corner posts or legs
- Two porcelain electric lamp bulb sockets (Porcelain lamp sockets are necessary for these lamps)
- One 150-watt, 115- to 120-volt projector or reflector Mazda spot or flood lamp and one 250-watt R-40 Bulb Drying lamp
- Twenty feet of rubber-covered electric appliance cord with plug and cap

No special provision need be made for ventilation. That which takes place through the open space between the lower edge of the hover and the floor will be ample. As the chicks or poults grow larger and need more air and less heat, bricks or blocks can be placed under the legs to raise the hover 2, 4, or 6 inches higher. When feed and water are to be placed under the hover, or the floor litter is to be removed, one side can be raised to the desired height and held in place by a hook suspended from the ceiling of the brooder house.

This type of brooder with the abundance of light within makes it convenient to feed and water the chicks or poults under the hover during the first day or two; after that, the feed and water can be moved outside. The abundance of light beneath the hover and the feeding of baby turkeys under the hover during the first few days have proved especially advantageous for starting poults.

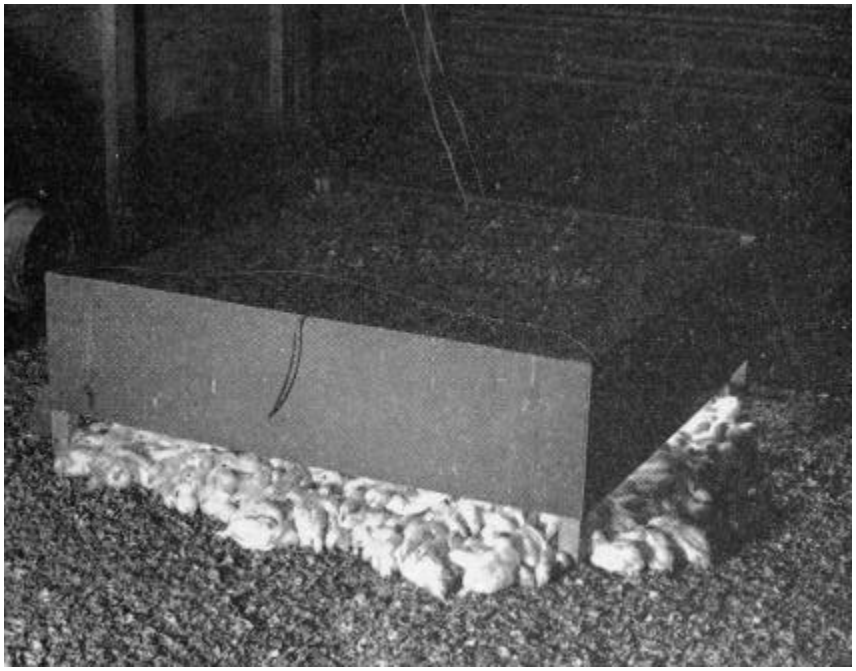

**Figure 4. Chicks under the brooder at night.**

No thermostatic regulation of the temperature is needed, since the chicks readily adapt themselves to their own temperature requirements and comfort in a brooder of this kind. Whenever it is observed that a considerable number of the chicks find it comfortable at the edge of, or outside, the brooder, the hover should be raised 2 to 4 inches to admit more air and to lower the temperature beneath it. If two lamps are in use, one can be turned off.

The curtains used at the Experiment Station when needed to prevent floor drafts or to conserve heat under the hover during cold weather are strips of cloth 8 inches wide and 4 feet long made from feed bags. The strips are attached to the sides of the hover with thumbtacks so that the bottom of the curtain is ½ to 1 inch above the floor litter. The bottom of the curtain should be hemmed but need not be slit. When the hover was used in a room provided with another source of heat so the temperature seldom went below 40 F, curtains were not needed unless there was evidence of a floor draft which caused the chicks to congregate at one side of the hover. When that occurred, a curtain was attached to the exposed side or sides opposite those where the chicks congregated. A curtain on one or two of the exposed sides gave effective protection against floor drafts. When day-old chicks were started in an uninstalled colony house during cold weather (10 to 20 F.) in January 1941, it was necessary to use curtains on three sides of the hover during the first week to conserve the heat under the hover. Afterwards, two of the curtains were removed; one was left to prevent floor drafts. Also, a corrugated cardboard band 12 inches wide was used to keep the chicks within 1 to 2 feet of the hover during the first few days. Feed and water were provided under the hover during the first 2 or 3 days.

In usual practice under average brooding conditions during April or May or in a room where supplementary heat is provided, the 250-watt lamp would generally be used during the first week or 10 days of the average 6-week brooding time, when the chicks or poults need the most heat. After that time, the 250-watt lamp would generally be discontinued, and the 150-watt lamp used for the rest of the brooding period. On this basis, the cost of operating the 250-watt lamp 10 days (at 18 cents a day of 24 hours with electric current at 3 cents a K.W.H.) would be $1.80, and that for the 150-watt lamp (at 10.8 cents a day for 32 days), $3.45. The total cost of electricity during a 6-week brooding period would, then, be $5.25. In warm weather, the cost of the electricity would be lower, since the brooder lamp would either be turned off, or one of the brooder lamps replaced by an ordinary 15-, 25-, or 50-watt Mazda light bulb to provide an attraction light and a small amount of heat during warm days or nights. Likewise, the small Mazda bulbs could be used during the latter part of the brooding period, when an attraction light and only a little heat are needed. On the other hand, brooding during cold weather in a cold room with both lamps in use much of the time would cost correspondingly more, just as the cost of brooding during cold weather is greater regardless of the source of heat.

The effective insulation against heat loss which this type of hover provides can, however, be expected to prove economical in the use of electricity regardless of the kind of electrical heating element employed. In two of the tests, meter

readings were made to secure the electric current requirement of the lamp brooder in comparison with a conventional brooder equipped with thermostatic heat regulation, fan, and special ventilation. The first test was conducted in uninsulated colony brooder houses during January and February, 1941, and the second, in adjoining brooder pens during April and May. In both cases, the electric current consumption was somewhat less for the lamp brooder.

The principal advantages of the electric brooder described are simplicity, low first cost, and effective insulation at practically no cost. Some poultrymen may be inclined to add needless complications and expense, such as thermostatic heat regulation, special ventilation, or other nonessential items or gadgets which would tend to offset the primary advantages and purpose of this type of brooder. The contention that such additions are needless is based upon the results of a year of almost continuous use of five of the brooders at the Station's Poultry Plant. Hundreds of chicks have been brooded at all times of the year under widely varying conditions. In all instances, satisfactory results were secured with these simple, inexpensive brooders. At no time was there noticeable evidence of a need for thermostatic heat regulation, additional ventilation, or other items that would make these brooders more complicated and expensive.