

UNIVERSITY OF KENTUCKY

COLLEGE OF AGRICULTURE

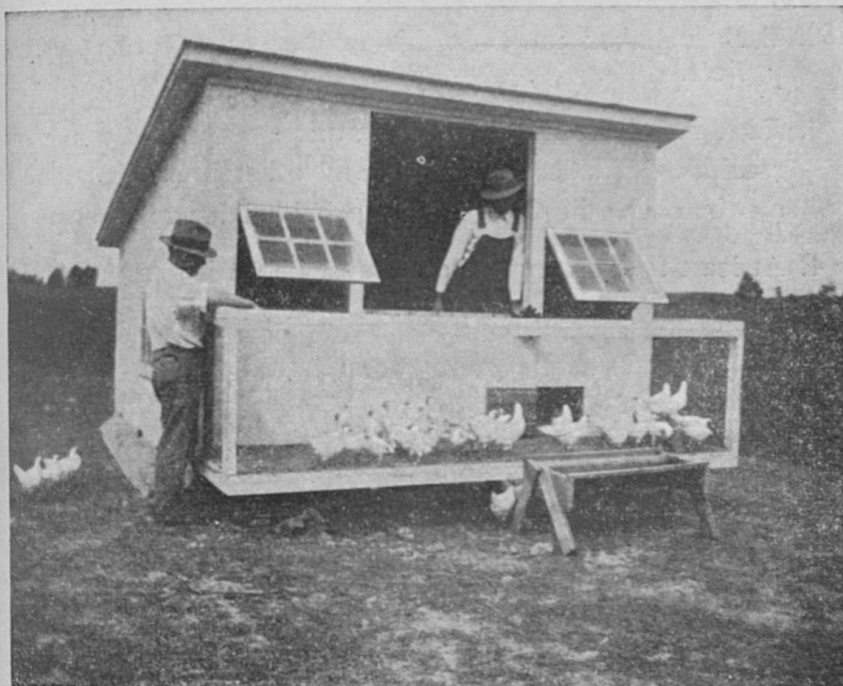
Extension Division

THOMAS P. COOPER, Dean and Director

CIRCULAR NO. 110
(SIXTH EDITION, REVISED)

HATCHING AND RAISING CHICKS

Poultry Project for 4-H Clubs



COLONY BROODER HOUSE WITH SUN PORCH

Lexington, Ky.

February, 1936

Published in connection with the agricultural extension work carried on by cooperation of the College of Agriculture, University of Kentucky, with the U. S. Department of Agriculture and distributed in furtherance of the work provided for in the Act of Congress of May 8, 1914.

Hatching and Raising Chicks

This project may be carried on by hatching and raising chicks with hens or by brooding chicks artificially. Hatching and raising chicks with hens is suggested for small boys and girls who cannot care for a brooder, whereas brooding chicks artificially is suggested for older club members who can care for a larger number of chickens and who are capable of operating a brooder stove.

Requirements

1. Members must be enrolled by March 15th.
2. Each member must do his or her own work on the project.
3. Each member must keep a complete record of expenses, receipts, death losses, culling and other items designated on the sheets in this circular provided for that purpose.
4. At least four settings of eggs must be set if hens are used.
5. If chicks are to be brooded artificially at least 200 should be used, but a member should not try to brood more than 250.
6. A member should not try to brood chicks artificially unless he or she can provide a brooder house, and a brooder.
7. The record must be completed by November 1st.

Consult your County Agent before ordering chicks, purchasing or building a brooder or building a brooder house.

A Word to Parents

Your son or daughter can learn more than poultry raising from this project. His or her success will depend largely on your support. A little encouragement from you will help the youngsters to want to do their best. *Give them your support.*

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HATCHING AND RAISING CHICKS
POULTRY PROJECT FOR 4-H CLUB MEMBERS

By
C. E. HARRIS

The object of this circular is to aid boys and girls who are planning to keep chickens bred for egg production. Also, it should help those who have good chickens to become more efficient poultrymen. It is hoped that the suggestions given herein will aid those who carry on this project and teach them the fundamentals of poultry raising.

Hatching and Raising Chicks With Hens

The value of chicks depends very largely on the breeding stock from which they come. The laying ability of pullets from a high-producing strain is much greater than that of pullets from a strain not bred for egg production. Therefore, eggs for hatching or chicks should be from a flock bred for high production. If eggs from the home flock are to be used they should be from hens rather than from pullets. The fertility and hatchability of the eggs will be greater if the breeding flock is given free range and green feed in addition to a good laying mash.

Eggs that are to be set should be gathered often, kept in a cool place where the temperature does not drop to freezing, and turned once each day until they are set. Fresh eggs hatch better than those that have been kept for some length of time. Eggs more than two weeks old should not be set. Hatching eggs should weigh not less than one and a half pounds to the dozen and should be uniform in size, shape and color and should have strong shells. Small or abnormally large eggs or those that have thin, porous shells or are dirty should not be set. However, if it becomes necessary to clean eggs that have been badly soiled, this should be done by wiping them lightly with a damp cloth. Hatching eggs should not be washed unless it is absolutely necessary.

It Is Important to Get Chicks Hatched Early

Provision should be made to get chicks hatched during March and April. Chicks hatched at that time of the year are easier to raise and are more profitable because fryers from early-hatched chicks sell for a higher price than those from later hatches. Pullets hatched during March and April will come into production sooner and will be more profitable than those

hatched later. In order that chicks may be put into the brood coop or brooder house during March or April, provision for setting the hens or purchasing chicks must be made a few weeks in advance of that time.

Selection of the Broody Hens

Hens of the small breeds such as the Leghorn should never be set. They are highly nervous and fretful and are apt to quit the nest. Gentle hens of the general-purpose breeds, such as Plymouth Rock, Rhode Island Red and Wyandotte, are best for setting. Select a hen that has stayed on the nest for at least two days and then, after dark, move her to the place (away from the rest of the flock) where she is to be set. Place a few small eggs under her and if she remains on them for twenty-four hours she is ready to be given the good eggs. Not more than 15 eggs should be placed under the hen.

Setting the Hens

Hens that are to be set should be confined to a nest away from the laying flock. The nest should be at least a foot square. An orange crate makes an ideal nest. Soft hay or straw should be used as nesting material. A slatted front may be used to keep the hen confined to the nest. The broody hen should be dusted with some good louse powder before being transferred to the new nest. Sodium fluoride, which can be bought at drug stores, is a satisfactory louse powder. Punch a few small holes in the end of the can which contains the powder and thoroughly dust the hen. Be sure that the fluoride gets on the skin under the feathers at the base of the neck, under each wing, on the fluffy part of the thighs, and especially on the skin below the vent.

Care of the Setting Hen

The setting hen needs only grain and water. Keep a pan of clean, fresh water nearby and give her a liberal feeding of corn once each day. The hen should be allowed to leave the nest for feed and exercise once a day but should not remain off long enough for the eggs to become chilled. Give the hen all the grain she will eat while she is off the nest. The nest should be examined each day for broken eggs. If broken eggs are found the soiled eggs should be gently wiped with a cloth dipped in warm water. Soiled nesting material should be replaced with clean straw or hay. The droppings should be removed when necessary. Do not allow droppings to accumulate in the nest. Be sure the hen is dusted with sodium fluoride just before she is set and again in about ten days.

Care of Hens and Chicks At Hatching Time

A brood coop which provides ample room for the hen and chicks should be ready at hatching time. The coop or box should be rat-proof and should be placed on 2 x 4 inch runners so that it can be moved conveniently. By placing the brood coop off the ground the floor remains dry and rats cannot harbor under it. The brood coop should be well ventilated and have a tight floor. The floor should be covered with about two inches of litter. Clean the coop and change the litter often. The top of the coop should be hinged so that the interior can be sunned on warm days. A metal coop with a wire extension in front may be purchased at hardware or poultry supply stores. It may be advisable to buy metal coops for brooding the chicks, since the loss of chicks from rats often is greater than the cost of rat-proof coops.

When the eggs begin to hatch the hen should not be disturbed. If she should become restless and want to leave the nest before the chicks are all hatched, remove the chicks that are dry and keep them in a warm place until the hatch is completed. Be careful not to let them smother or chill. When the hatch is completed the chicks can be put with the hen that is to raise them. In March and April it is better not to put more than twenty chicks with one hen, but in warm weather one hen can brood as many as thirty chicks successfully.

The hen should be fed shelled corn as soon as possible after the chicks are hatched, because this tends to keep her contented and quiet.

It is advisable to examine the hen carefully for lice after the chicks are hatched. If lice are found, the hen should be dusted some morning when the chicks are let out of the coop. Do not use any kind of grease or oil on a hen that is brooding little chicks.

Provide Suitable Watering Utensils

Fill a gallon bucket (or a 3-pound coffee tin) with water and invert it in a pan two inches deep, leaving just enough space between the bucket and the side of the pan for the chicks to drink. Punch holes in the side of the bucket or can one and a half inches from the open end. This keeps the water level one-half inch from the top of the pan. If open pans or troughs are used as watering utensils they should be covered with slatted guards to prevent the water from becoming contaminated. Each guard should be just large enough at the bottom to fit over the pan or trough. The slats which make up the guard should be placed far enough apart to permit a

chick's head to go between but not far enough to let the chicks go thru.

Provide Satisfactory Feeders

A satisfactory feeder is one which allows the chicks free access to the feed and at the same time prevents them from getting into the feed. Feeders may be bought or can be made at home. A very satisfactory feeder can be made by using an oblong box 4 inches wide, 2 inches deep and 3 feet long. A strip should be nailed to the edge of the box allowing it to extend one-half inch over the inner edge to prevent waste of feed by "billing." A reel made of very light material (laths) placed over the top of the box prevents the chicks from getting into the feed. The feeder should be placed in an enclosure which permits the chicks to have access to the feed but prevents the hens from getting to the feed. A small box or a tin can in which corn for the hen may be kept should be placed in one corner of the brood coop. If the lid of the chick box is used as a feeder the first few days be sure clean newspaper is placed in the lid each time feed is added. However, paper pie plates are more satisfactory feeders for the first few days. They should be burned as soon as they get dirty.

Care of the Hen and Chicks

The hen and chicks should be confined to the brood coop during the night and until the dew is off the grass in the morning. It is advisable to have a small pen (4 x 10 ft.) built in front of the coop in which to keep the chicks during the daytime for the first three weeks. After the third week, the pen may be removed and the hen and chicks allowed to range so that they may get plenty of green feed and exercise.

The following suggestions will prove of value in caring for the chicks.

All feed should be fed dry in hoppers into which the chicks cannot get their feet.

Feed only fresh, clean feeds.

Get the chicks out-of-doors in the direct sunshine as soon as the weather permits.

Follow the feeding schedule given below using either of the all-mash mixtures for the first ten weeks, after which the growing mash and grain may be fed.

Schedule For Chick Feeding

Feed and water or milk should be placed before the chicks as soon as they are put into the brood coop and it should be kept before them constantly. Clean, fresh water should be provided frequently unless milk is fed. No water is necessary if all the milk the chicks will drink is kept before them.

Starting Mash Mixtures

ALL-MASH MIXTURE (FED WITH MILK)

Ground yellow corn	70 lbs.
Mixed wheat feed (shipstuff)	25 lbs.
Bone meal (steamed or raw)	2 lbs.
Salt	1 lb.
Cod liver oil*	1 pint

and

All the skim milk or buttermilk the chicks will drink. No additional grain is needed.

ALL-MASH MIXTURE

(No milk or additional grain needed)

Ground yellow corn	70 lbs.
Wheat shorts or shipstuff	25 lbs.
Meat and bone scrap (50% protein)	10 lbs.
Salt	1 lb.
Cod liver oil*	1 pint

*Omit if chicks are out in sunshine. Sardine oil, cod liver oil concentrate, or any other biologically tested source of vitamin D may be used in amount recommended by manufacturer.

Growing Mash

Mixed wheat feed (shipstuff)	30 lbs.
Ground yellow corn	10 lbs.
Meat and bone scrap (50% protein)	10 lbs.
Salt	1/2 lb.

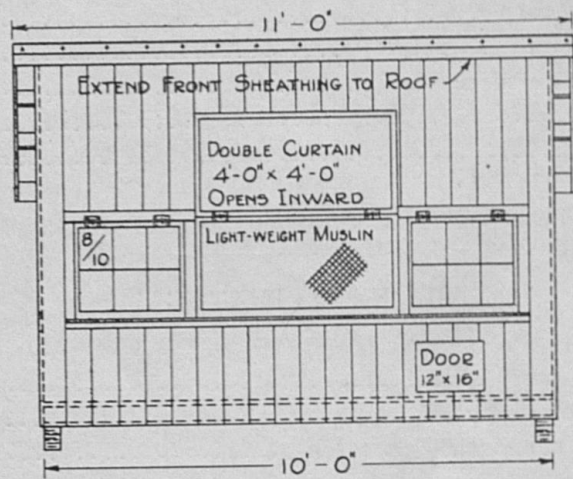
To be fed with grain such as

Yellow corn	50 lbs.
or	
Yellow corn	25 lbs.
Wheat	25 lbs.

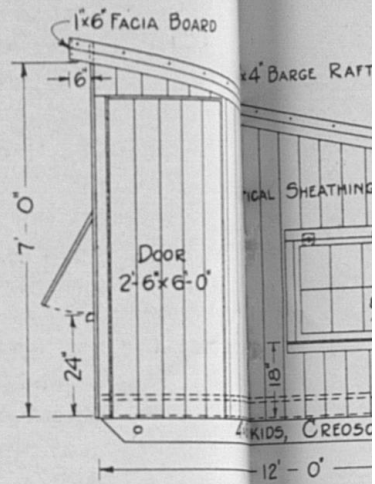
Summer Management Suggestions

Sell all cockerels as soon as they reach the weight of 2 lbs. If properly fed, the cockerels will be ready for market at 10 or 12 weeks of age. By selling the cockerels at this time a higher price will be secured for them and the pullets will have a better chance to develop. Remember that a 2-pound fryer sold early in the season brings about as much money as a 6-pound cockerel in the fall.

After the cockerels have been sold, move the pullets away from the home flock and feed them a growing mash such as

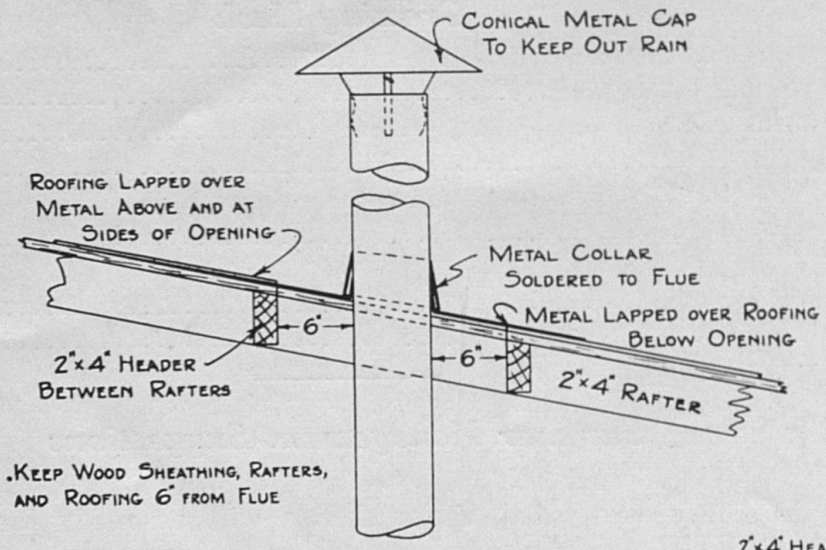


FRONT ELEVATION
SCALE $\frac{1}{2}" = 1'-0"$

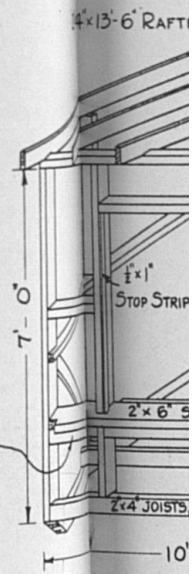


ELEVATION
SCALE $\frac{1}{2}" = 1'-0"$

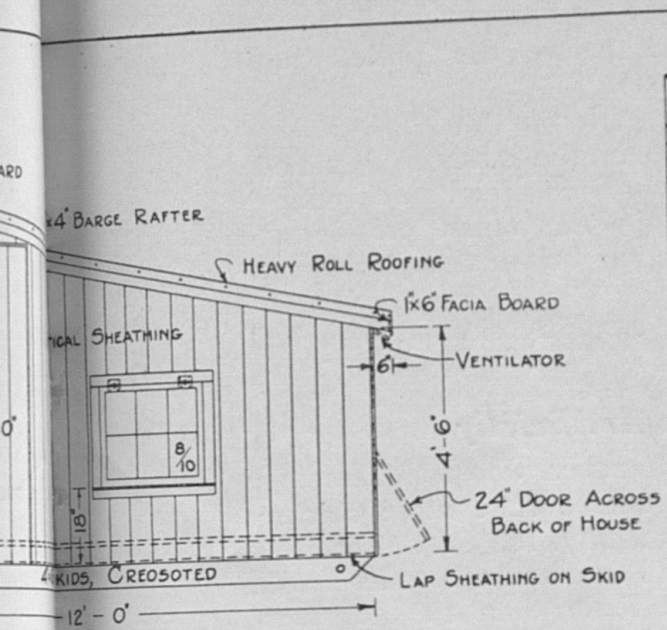
NOTE: WHEN ALL OPENINGS ARE MADE IN ROOF, POULTRY NESTS SHOULD BE PROVIDED.



STOVEPIPE HOLE DETAIL
SCALE $1\frac{1}{2}" = 1'-0"$

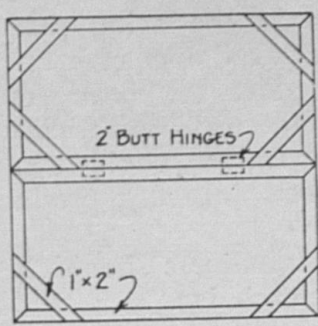


OBLIQUE

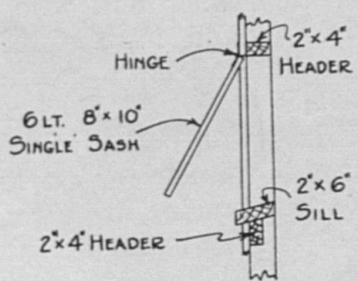


ELEVATION
SCALE $\frac{1}{2}$ " = 1'-0"

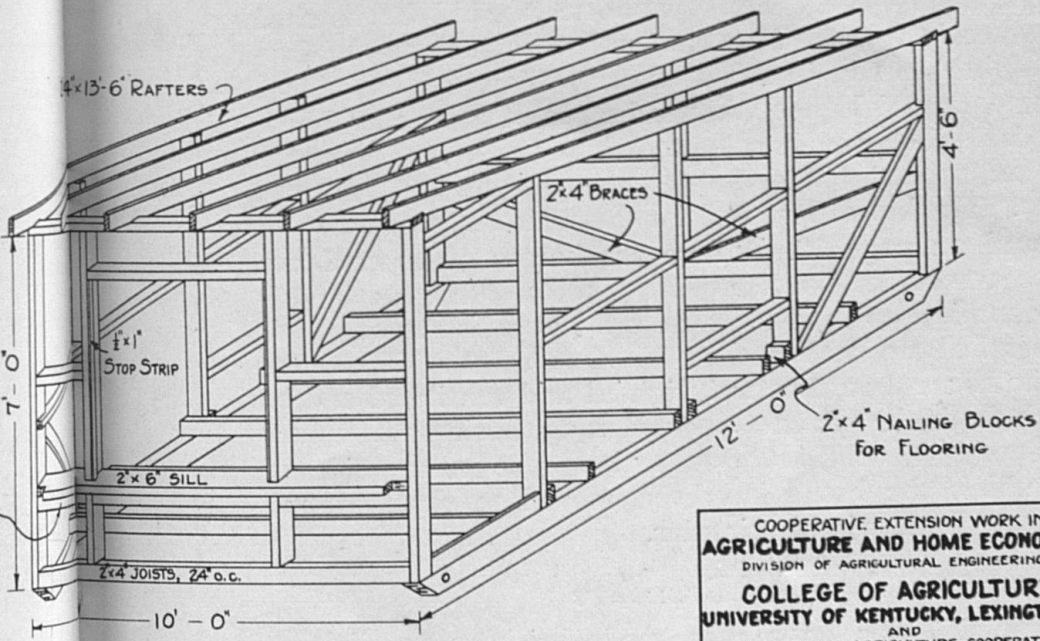
NOTE: SEEN ALL OPENINGS WITH POULTRY NETTING



DETAIL OF CURTAIN
SCALE $\frac{3}{4}$ " = 1'-0"



WINDOW DETAIL
SCALE $\frac{3}{4}$ " = 1'-0"



OBLIQUE DRAWING OF FRAMING
SCALE $\frac{1}{2}$ " = 1'-0"

COOPERATIVE EXTENSION WORK IN
AGRICULTURE AND HOME ECONOMICS
 DIVISION OF AGRICULTURAL ENGINEERING
COLLEGE OF AGRICULTURE
UNIVERSITY OF KENTUCKY, LEXINGTON, KY.
 AND
 U.S. DEPT. OF AGRICULTURE COOPERATING
10' x 12' BROODER HOUSE
 DESIGNED BY J. B. KELLEY, DATE TRACED MAY 6, 1933
 DRAWN BY NORMAN MATSON, APPROVED BY
 CHECKED BY J. B. KELLEY, SHEET 1 OF 1 SHEETS
 TRACED BY NORMAN MATSON, FILE NO. 11.727-3

the one given. Keep this feed before the pullets until they are ready for the laying quarters.

If milk is available, give one gallon a day to each forty pullets and reduce the meat scrap in the mash to 5 pounds. Do not give the chicks milk when a commercial chick mash is fed. Such a ration would contain too much protein and bring the pullets into egg production before they had grown to maturity.

All milk containers should be carefully cleaned with boiling water once each day.

Brooding Chicks Artificially

These suggestions are for club members who are old enough to care for a brooder and who want to raise more chickens than can be brooded economically with hens. If 150 or more chicks are to be brooded, a brooder house and a brooder should be used. It is suggested that not fewer than 200 nor more than 250 chicks be brooded in one house. The labor required to care for this number of chicks in one brooder house is no more than that of caring for a few hens with chicks.

Most of the eggs that are produced during the season of high prices are laid by early-hatched pullets therefore, in order to produce high-priced eggs, it is necessary to hatch the pullets early. The general-purpose breeds, such as Plymouth Rock, Rhode Island Red and Wyandotte, should be hatched in March or early April. The smaller breeds such as the Leghorn should be hatched in April or early May.

Raising early chicks necessitates the use of a brooder house and a brooder. The shed-roof type of brooder house, plans for which are on page 8 has given excellent results in all parts of Kentucky. The bill of material for this 10 x 12 brooder house will be found on page 12. There are houses on some farms that can be remodeled into brooder houses, but generally it is more economical to build. If an old house is remodeled it should be jacked up and put on runners so that it can be moved. The house should be well lighted and ventilated and be high enough from the ground to prevent harboring rats under it. A sun-porch should be placed along the sunny side of the house unless the house has been moved to clean ground. See picture on front of this circular.

Types of Brooders

A commercial brooder, a home-made brick or an oil-drum brooder may be used satisfactorily. If a brick brooder is to be built get a copy of Poultry Leaflet No. 5, for instructions.

Preparing the House for the Chicks

1. Disinfect the brooder house before putting the chicks into it. Sweep the floors and walls, then scrub them with boiling lye water. Use a 13-oz. can of lye to 5 gallons of water, applying it with a long-handle scrub-brush. *Do not get the solution of lye on your hands or face.*

2. Move the house to new ground where no chickens have been the year before. If possible, brood the chicks on ground where chickens have not previously ranged for two years. If the house cannot be moved, confine the chicks to the house and sun-porch for 10 weeks.

3. A thin layer of sand may be placed on the floor of the brooder house. It may be covered with finely cut straw, hay or coarse shavings after 10 days to two weeks.

4. Place the brooder in the center of the house.

5. The corners of the brooder house should be rounded with poultry netting to prevent the chicks from crowding and smothering.

6. See that the brooder is in working order.

7. Check the thermometer for accuracy with a clinical (doctor's) thermometer, or any other thermometer known to be accurate.

8. Use a five-inch stovepipe if soft coal is burned. If the brooder is not equipped for a five-inch pipe, put a reducing joint where the pipe fits the stove.

9. Fire the brooder for two days before the chicks are put into the house. Hang the thermometer at the edge of the canopy (or 2 feet from the brick or oil-drum brooder), one inch above the floor, and have the temperature regulated before chicks are put into the house. The temperature should be kept about 95° F. for the first week. It may be reduced gradually about 5 degrees each week as the chicks grow older and the weather gets warmer.

10. Be sure that the feeders and water fountains are filled before the chicks are put into the house.

Brooding the Chicks

Only vigorous chicks should be put into the brooder house. All weak or deformed chicks should be killed as they may be the means of spreading disease thru the flock.

Provide feeders as described on page 6 of this circular.

Those brooding chicks artificially should follow the schedule for chick feeding and the summer management suggestions given on page 7. Get the chicks out on the sun porch as soon as the weather permits.

Bill of Material for Brooder House 10 Ft. Wide and 12 Ft. Deep.

Runners	2	4"x6"x12'	—48 bd. ft.
Joists	7	2"x4"x10'	—47 bd. ft.
Rafters	6	2"x4"x14'	—66 bd. ft.
Plates, etc.	3	2"x4"x12'	—24 bd. ft.
Nailing pieces and headers	3	2"x4"x12'	—24 bd. ft.
Window sill	1	2"x6"x12'	—12 bd. ft.
Studding	3	2"x6"x14'	—28 bd. ft.
Studding	3	2"x4"x12'	—24 bd. ft.

273 bd. ft.

Rough boxing, 1"x10", No. 2	425 bd. ft.
Flooring, 1"x6", Matched No. 2	150 bd. ft.
Battens, 1/2"x3"	436 linear ft.

Curtain frames, 8 pcs. 1"x2"x4'	5 lbs. 16 penny nails
Roofing, 144 sq. ft. of 3-ply	1 piece of unbleached muslin
Two pairs sash, 6 light 8"x10"	1 1-3 yds. square for curtain
8 pairs 2" steel butts	6 linear ft. 1" mesh 4 ft. poultry netting (to cover curtained opening and front windows).
1 pair 6" T hinges	10 linear ft. of 1" mesh 3 ft. poultry netting (to cover opening in back of house).
6 pairs 1 1/2" hooks and eyes	
16 lbs. 8 penny nails	
5 lbs. 6 penny nails	
5 lbs. 4 penny nails	

Place a circle of wire netting around the brooder stove about two feet beyond the edge of the canopy to prevent the chicks straying too far from the stove. This should be removed after the chicks are three or four days old. Do not use the wire with a brick or drum brooder.

Records

Do not neglect the record sheet. Keep a record of all items of expense. Do not rely upon memory to make a report at the close of the project. Attend to the record sheet every day that work is done on the project; if this is done the record will be accurate and the information which it gives will be valuable.

Club member's name

Postoffice..... County..... Age.....

Name of Club

Leader's name

Why did you enroll in the poultry project?

.....

Record of the Project

Date project began , 193...

Breed selected

Why did you select this breed?

.....

What breed is the farm flock?

How did you get your eggs or chicks?

.....

.....

Record of Hatching and Brooding Chicks

Date Eggs Set or Chicks Bought	No. of Eggs Set	Fertile Eggs 7th Day	No. Chicks Hatched or Bought	No. Died	No. Raised
Toto's					

How hatched

How brooded

Kinds of feed used

.....

.....

.....

Did you win any prizes?

What were they?

Business Account of Poultry Project

Do not write on this page until the project is finished. Then compile the report from records on the preceding pages.

COST

Cost of poultry house, coops or other equipment built or bought	\$.....
Value of equipment on hand	\$.....
Cost of eggs for hatching or baby chicks purchased	\$.....
.....	\$.....
Cost of feed used	\$.....
Value of time @ 10c an hour	\$.....
Miscellaneous expenses	\$.....
Total cost	\$.....

RECEIPTS

Total value of equipment on hand	\$.....
Market poultry sold	
Friers, No. Value \$.....	
Cull pullets No..... Value \$.....	
Cockerels No..... Value \$.....	
Breeding Stock sold	
Cockerels, No. Value \$.....	
Pullets, No. Value \$.....	
Cockerels on hand Nov. 1 No..... Value \$.....	
Pullets on hand Nov. 1 No..... Value \$.....	
Miscellaneous receipts	Value \$.....
	Total value \$.....
	Total cost \$.....
	Net gain \$.....

If eggs from the home flock were used for hatching give them the value they would have cost if bought.

Story of How I Raised My Chickens

The story must be in the club member's own hand writing. Accuracy, completeness and clearness are most important but neatness should also be considered.

Photographs and Drawings

Show by drawings the plans and location of brooder house, self-feeder, pastures, etc. Also include photographs of your birds and yourself, taken together if possible. If you have made or provided any equipment for feeding or caring for your birds, illustrate it by drawings.

Poultry Publications

Mailed free on request to the College of Agriculture, Lexington, Ky., or obtainable from County Agents.

Extension Publications

Leaflet

No.

- 2. Chickens Help You Live at Home
- 4. Producing Profitable Pullets
- 5. Home-Made Brick Brooder
- 6. Metal Drum Brooder Stove

Circular

No.

- 107. Housing Farm Poultry
- 137. The Feeding and Care of Laying Pullets (4-H Project)
- 157. Brooding Chicks Artificially
- 167. When and How to Cull
- 186. Feeding for Egg Production
- 219. Good Eggs for Market
- 244. Chicken Pox
- 265. Poultry Parasites and Sanitation
- 275. Profitable Turkey Management
- HH. Helpful Hints for Poultrymen

Experiment Station Publications

Bulletin

No.

- 260. Sources of Animal Protein for Laying Hens
- 285. Marketing Kentucky Poultry
- 291. Calcium Carbonate and Hatchability
- 294. Feeding Trials With Laying Hens
- 304. The Effect of Vitamin D Supplements on Laying Hens
- 337. Cod Liver Oil for Laying Pullets
- 342. Iron and Copper Content of Egg Yolk
- 343. The Effect of Confinement Brooding on Growth and Egg Production

Circular

No.

- 40. Bacillary White Diarrhea