

TO THE POULTRY CLUB MEMBER

4-H Poultry club work, may be interesting and profitable, depending upon the interest and efforts of the club members. Chickens require constant attention. Poultry husbandry is more than "feeding chickens;" it is a 365 day job each year which includes housing, feeding, breeding, and above all, intelligent marketing.

Although poultry club work is exacting, it probably offers greater returns for money expended than any other club project. It may be made a profitable side line while the member is attending school.

Kinds of Poultry Clubs

Poultry club work is divided into five definite projects: Capon Clubs; Chick Rearing Clubs; Pullet Clubs; Flock Management Clubs; and Turkey Clubs. Each club has its own "set-up" which should be understood before a member enrolls.

The term "set-up," as used in this bulletin, means everything needed in carrying on the project; house, equipment, feeds, and stock. When club members fail to provide a proper set-up they handicap themselves and court failure. A simple project with a modest "set-up" should be chosen for the first year's work and the capon club is recommended as this is probably the simplest. Chick rearing is the most difficult and should be avoided the first year.

"The Poultry Club Record Book," an important part of the members set-up is furnished to each member by the Montana Extension Service. By keeping the record book accurately and studying the record of kind, amount, and cost of feeds, expenses, receipts, etc., the club member may be reliably guided in the development of his poultry enterprise.

Capon Club Set-Up

1. Club will be organized only when there is a turkey marketing association or an equally satisfactory market available in the county.
2. Purchase dual purpose cockerels weighing 1 to 2 lbs. or 6 to 8 weeks old. At this age no brooding equipment is needed.
3. Set of caponizing instruments owned by the club.
4. A sanitary, well ventilated roosting shelter, (preferably portable) on clean alfalfa or sweet clover. (See Fig. 8).
5. Sufficient drinking and feeding equipment. (See Fig's. 9 and 10).
6. Enough growing feed to carry the capons from midsummer to Christmas and enough fattening feed from Christmas to the middle of January. (See page 11).

Chick Rearing Club Set-Up

This project includes the management of chicks up to the "Pullet Project" or the time when they go into laying quarters. Therefore, before enrolling in the chick rearing project, the needs of the pullet project should be anticipated, that is, there must be assured a satisfactory laying house, feed for the winter, and a good egg market. There are several methods of procedure in the Chick Rearing Project: (A) Starting with 6 to 8 weeks-old chicks; (B) Starting with day-old chicks; (C) Starting with hatching eggs. Method A is recommended for beginners.

Method A (8 week pullets):

1. An adequate supply of growing mash and grain. (See page 9).
2. Sanitary, well ventilated roosting quarters on clean ground, preferably in alfalfa or sweet clover. (See Fig. 8).
3. Feeding and watering equipment. (See Fig's 9 and 10).

Method B (day old chicks):

1. An adequate brooder house. (See Fig. 2).
2. Adequate brooder house equipment. (See Fig's. 3, 4, and 5).
3. Chick bands or markers.
4. Chick starting mash. (See page 8).
5. Same as 1, 2, 3, of Method A "Set-Up."

Method C (hatching eggs):

1. At least 150 eggs.
2. A reliable incubator or ten or twelve setting hens.
3. All of the "set-up" of Method B.

Since experienced poultrymen consider home hatching an unsatisfactory method of replenishing the laying flock, the inexperienced club member should avoid this method except under unusual circumstances. The average small incubator is uncertain and to rely on enough setting hens to produce 100 good chicks is unsatisfactory.

The Pullet Club Set-Up

This club can be interesting and profitable if the member has built his foundations well, and is provided with proper equipment. With this club, the birds come into production and begin to return a weekly income. Chicks improperly handled during the growing period, will never respond as they should when they become hens. Therefore, unless a member has reared worthwhile pullets it is wise to sell them for meat and start again next year. The proper set-up for this club runs into money, yet a satisfactory labor income cannot be realized unless the set-up is complete. A complete set-up includes:

1. A Montana type poultry house or its equivalent—fully equipped. (See Fig's. 12, 13, and 14).
2. Marketing equipment.
3. Fully matured and properly culled pullets.
4. An adequate supply of laying mash, grain, green feed, and minerals. (Page 18).

The 4-H Poultry Club Manual

By

MISS H. E. CUSHMAN,
Extension Poultry Specialist

INCUBATION

Selection and Care of Eggs

Eggs should be selected from a mature, healthy flock that has been fed a balanced ration and has had sufficient mineral and green feed.

Hatching eggs should be gathered twice a day, held between 40° to 60° F. in a clean, not too dry, place for not over 10 days and turned daily.

Only eggs with uniform shells, averaging 24 oz. to the dozen should be chosen. All abnormal eggs must be discarded.

Natural Incubation

1. The Nest should be made on the ground or in a clean roomy box (12" x 14") with two inches of earth in it and the earth covered with clean straw. The nest should be placed away from laying quarters in a place free from mites.* When several hens are to be set at once a battery or series of nests can be arranged. Each nest should have a card tacked upon it stating hatching date.
2. The hen to be used as a setter must be healthy and must be deloused and dewormed** She should have a quiet disposition (Rhode Island Red or Plymouth Rock preferred) and should indicate that she intends to set persistently. It is wise to try the hen out on nest-eggs first, then move her to her real eggs at night.
3. Care of the setting hen is an important factor in successful incubation. A setting hen needs food, drink and exercise daily. Usually it is best to have her confined so that she can leave the nest only when taken off. Slat over the top of the nest will keep her in. Hard grains, greens, and plenty of fresh water are the best feeds for the setting hen. The club member must see that the hen returns to her nest before the eggs chill.

*See page 27 for treating for mites.

**See page 27 for treating for lice and worms.

Artificial Incubation

Each make of incubators has its own specific operating instructions, nevertheless, all have certain management factors in common:

1. Clean the incubator thoroughly before setting it, by washing it with a 5% solution of any good stock dip or disinfectant.
2. Set the machine where there is no mustiness or bad odor. An incubator must not be exposed to sudden changes of room temperature but it must have plenty of fresh air.
3. Run the incubator accurately. Faulty operation may result in stunted, crippled, or dead chicks. In general, operating directions are:

Temperature—102°, 1st to 3rd day

103°, 3rd to 19th day

103½°, while hatching

Cooling—Cool daily after 3rd day until 19th day.

Test—On 7th day and 14th day.

Moisture—Have plenty of moisture, especially at hatching time.

4. Testing or candeling is the process of turning an egg in front of a candler in a darkened room. A home-made candler can be made by putting a light inside a box or can and cutting a hole about the size of a half dollar in one side. The 7th day test is made in order

to remove clear or infertile eggs and dead germs. The latter show up as dark spots that may or may not be surrounded by a blood ring. The germ of the fertile egg, on the other hand, looks like a spider. The dark germ spot has many blood vessels radiating from it. The 14th day test is used to remove dead germs occurring after the 7th day.

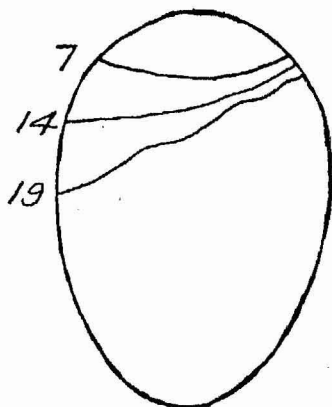


Figure 1—Lines indicate air spaces at different candling periods under proper moisture conditions.

5. Moisture is also determined by candling. Figure 1 shows how to determine whether or not there is enough moisture. Too much moisture is corrected by longer cooling. Too rapid evaporation is rectified by sprinkling or adding moisture trays.

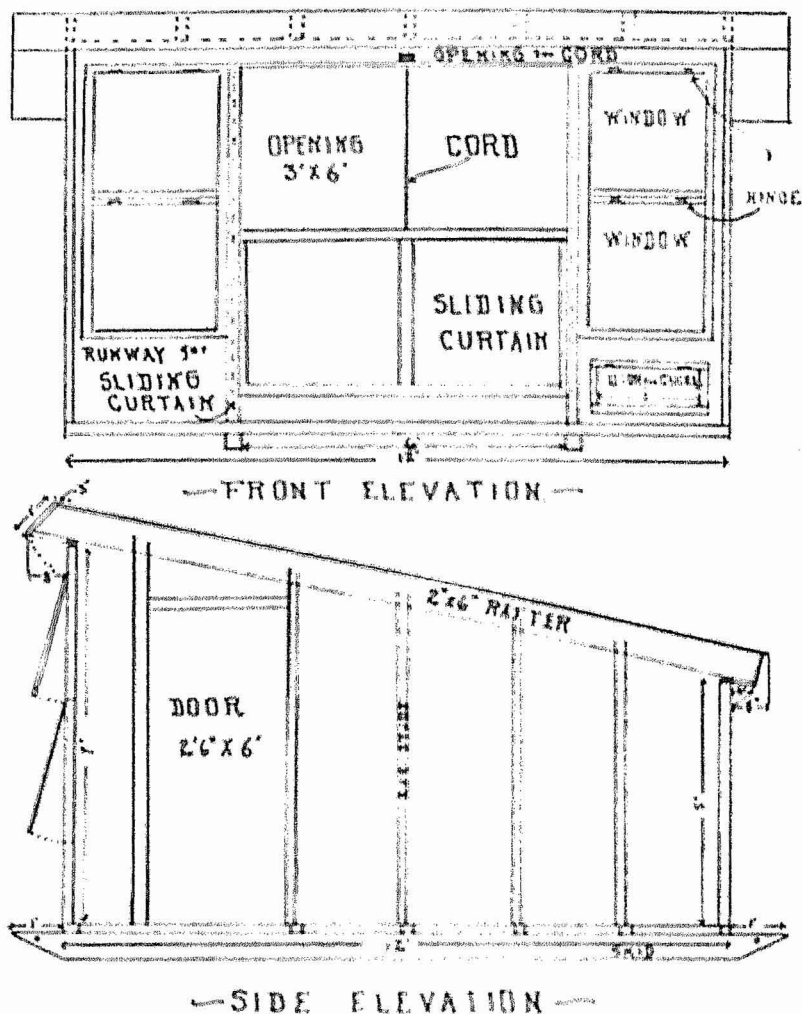


Figure 2—Montana Type Brooder House.

BROODING

The way chicks are nurtured during the brooding period affects future egg production. Correct temperature, feeding and housing are necessary whether chicks are brooded naturally or artificially.

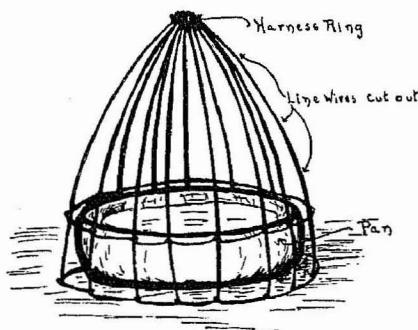
Artificial Brooding

Since artificial brooding is recommended for those club members who

intend to raise enough birds to carry on the pullet club during the fall, this method will be discussed first and in greater detail.

The Brooder House—The first requirement of a good brooder house is sufficient floor space, at least 1 square foot per 2½ chicks. Since the club member, if at all successful, will soon be carrying units of 100 adult hens, it is economy to start with a brooder house that will accommodate from 250 to 300 chicks. Therefore, club members are urged to build the regular 12' x 12' Montana type brooder house. This will accommodate a 52 inch hover, but will not be too large to be portable. Proper ventilation is necessary in the brooder house and is provided by the sliding curtain plus the rafter ventilators of the Montana brooder house.

Brooding Equipment—Equipment should be provided to take care of the chicks' needs for more than the first few days. Since many commercial feeders and fountains are inadequate, it is recommended that the club members make their brooder equipment. At least one linear inch of feeding space and drinking space should be allowed for each chick. If possible, the brooder equipment should be placed on a hardware cloth platform. This keeps the floor clean and safe for chicks.



DRINKING FOUNTAIN PROTECTOR
MADE FROM ELECTRIC WELD FENCING.

Figure 3—Drinking fountain protector made from electric lawn weld fencing with the line wires cut to permit hens putting their heads through to drink. (Maryland Exp. Sta.)

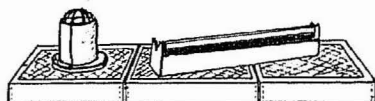


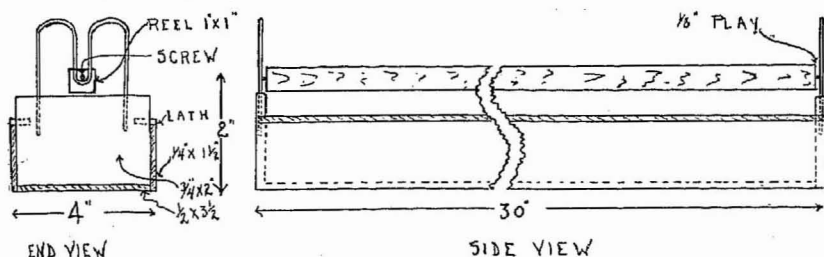
Figure 4—A hardware cloth platform for feeding and drinking equipment.

Recommended because it aids in sanitation and safety.

Note: The brooder house should be finished, the brooder stove burning, and all equipment in place at least 24 hours before the chicks arrive.

The Yard—Since many chick diseases are caused by unclean ground, one of three things must be done to provide a clean yard: (1) Move the

NO 8 WIRE REEL SUPPORT



CHICK FEEDER.

Figure 5.

brooder house to clean ground, or (2) scrape a fenced-off space and surface it with clean gravel, or (3) make a sun porch.

The Chick—Since the initial cost of good chicks is only slightly higher than cheap ones, and since the profits from the better chicks when grown far exceeds the receipts from the cheap chicks, club members should make every effort to get healthy chicks from flocks of known production.

There is only one inherited chick disease, pullorum disease or Bacillary White Diarrhea. This can be eliminated by purchasing B. W. D. tested chicks.

Since chilling or overheating causes symptoms exactly like B. W. D. chicks should not be on the road over 24 hours, or make poor railroad connections

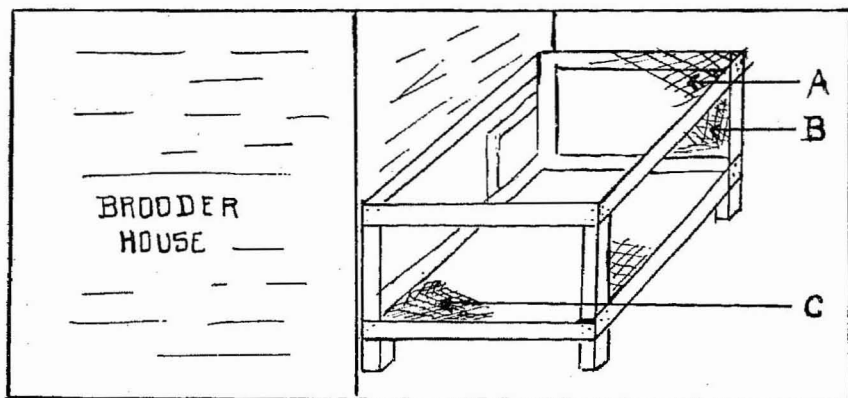


Figure 6. A brooder house with sun porch. Note the use of wire of chick sized mesh for the top (A) and sides (B). Hardware cloth (half inch mesh is used for the floor (C).

Feeding and Management Schedule

Day	Temp.	Scratch	Mash	Green Food	Drink	Other Factors
First 48 hrs. 1st feeding day	98 to 100 degrees	None	None	None	Milk	Darken room an hour each morning and afternoon so that birds will rest. Have chick size grit and oyster shell available at all times.
2nd " "		Five times daily	None	None	A little at noon	
3rd " "			None			
4th " "			None			
5th " "			Bran 10 to 10:15 a. m.			
6th " "	Bran 10 to 10:15 a. m.					
7th " "	Add small amount of mash to bran 10 to 10:15 a. m.					
8th " "	Add more mash to bran 10 to 10:15 a. m.					
9th " "	Straight mash 10 to 10:30 a. m.					
10th " "	Mash 10 to 10:30 a. m. and 1 to 1:30 p. m.					
11th " "	10 to 11 a. m. and 1 to 1:30 p. m.					
12th " "	10 to 11 a. m. and 1 to 2 p. m.					
13th " "	10 to 11:30 a. m. and 1 to 2:30 p. m.					
14th " "	10 to 12 a. m. and 1 to 3 p. m.					
15th day to six weeks	95 degrees	3 times daily	10 a. m. to 3 p. m.	Amount that will be consumed in 15 minutes	Milk and water	None
Six weeks to maturity	90 down to 85	3 times daily	10 a. m. to 4 p. m.		Need none if range is green	Milk and water
	Gradually remove heat	3 times daily	Before them at all times			

Note—Some poultrymen prefer starting with mash instead of scratch. In that event start scratch on the 3rd or 4th feeding day.

Feeding—Chicks need body and bone building feeds (milk or meat scrap and minerals) as well as protective feeds (green feeds) and feeds that supply energy (grains). For the first four weeks the proper feed balance is very important. Consequently many poultrymen buy chick starting mash even though they mix their growing and laying mashes. However, a starting mash can be mixed if every ingredient is supplied. Generally speaking a starting mash should contain: 78% ground grains or grain by-products, 19.5% protein concentrates and bone meal, 2% calcium carbonate, 0.5% salt.

Accordingly the following starting mashes would be satisfactory:

- | | |
|--------------------------------|---|
| 1. 30 pounds bran | 2. 40 pounds ground wheat |
| 20 pounds middlings | 15 pounds ground oats |
| 10 pounds ground oats | 20 pounds ground barley |
| 20 pounds ground corn (yellow) | 5 pounds mill run or (bran and middlings mixed) |
| 16 pounds meat scrap | 16 pounds meat scrap |
| 2 pounds bone meal | 2 pounds oyster shell |
| 2 pounds ground oyster shell | 2 pounds bone meal |
| $\frac{1}{2}$ pound salt | $\frac{1}{2}$ pound salt |
| 2 pints cod liver oil | |
| 3. 35 pounds yellow corn | |
| 19 pounds bran | |
| 20 pounds ground oats | |
| 10 pounds meat and bone meal | |
| 10 pounds dried buttermilk | |
| 3 pounds ground oyster shell | |
| 2 pounds charcoal | |
| 1 pound salt | |
| 2 pints cod liver oil | |

In feeding chicks the mash is supplemented with grain mixture of equal parts by weight, of wheat, cracked corn, and steel cut oats. Also a daily supply of green feed is given.

Natural Brooding—In general the feeding and management of naturally

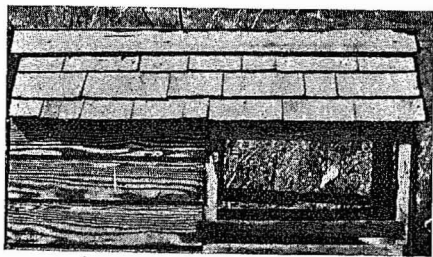


Figure 7—A desirable type of coop for natural brooding.

brooded chicks is the same as that used in the artificial method with the exception that a mother hen provides the heat. Chicks managed with the hen also need roomy quarters, clean ground, and the right kind of feed. Therefore the member using natural brooding should carefully read the chapter on artificial brooding. In addition the member must deworm and delouse the mother hen.*

*See page 27 for methods of delousing and deworming.

REARING YOUNG STOCK

As soon as possible after heat is no longer needed in the brooder or after the chicks are weaned by the hen they should be removed to a well ventilated roosting shelter. It is best to put this shelter in an alfalfa or sweet clover pasture. The shelter should be light so that it can be moved at least once a week to clean ground. (Fig. 8).

Growing birds make slower weight gains than young chicks. Therefore a growing mash is substituted for the starting mash in order to prevent pullets from "coming into lay" too early. This contains less protein material. No more than 5 pounds of meat scrap in 100 pounds of mash are necessary where there is plenty of green feed, or 10 pounds to the 100 where the range is dried up or poor.

Range Feeding and Watering Equipment

At this age the cockerels should be separated from the pullets. If Leg-horns are raised the cockerels should be sold as broilers. If heavy or dual purpose breeds are to be kept this is the time for caponizing.

CAPONS

Capons are unsexed males of dual purpose or heavy breeds. The reason for producing capons is that they grow larger and

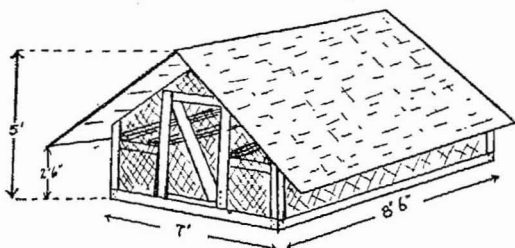


Figure 8—Roosting Shelter

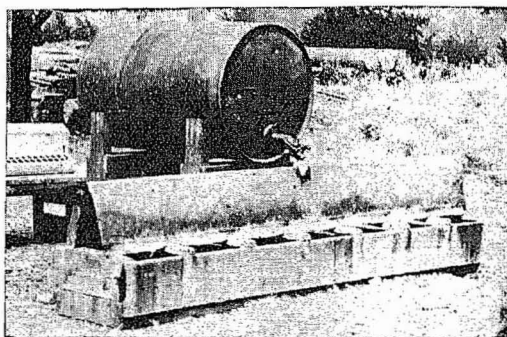


Figure 9—Watering Device

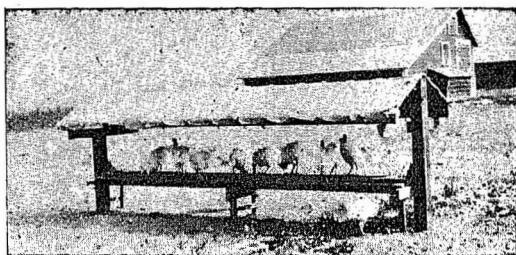


Figure 10—Mash Hopper

because the meat is better flavored they bring a better price per pound than unaltered male birds.

The earlier the operation is performed the less the birds suffer from shock and set back. Therefore the operation is usually performed as soon as sex can be distinguished, which will be when dual purpose birds are about 7 to 9 weeks old or when they weigh about 1 to 1½ pounds.

Caponizing

Instruments—There are a great many caponizing instruments. No matter which kind is used, the set must have: a knife to make the incision; a spreader to hold the incision open; a hook with one blunt end to tear the tissues and press back the intestines; an extractor to remove the testicle. An extractor made like a forceps does a more complete job than one made like a spoon.

Starving—In order to perform the operation successfully birds must be starved for 24 hours before operating. However, giving water to drink helps to empty the intestines.

The Operation—Either a box or barrel can be used for an operating table. If the bird is placed on an old magazine during the operation, a clean page can be used for each bird. Club members should remember that they are performing a major operation and cleanliness is important. The instruments should be kept in a disinfectant solution when not in use. Use either a 5 percent Lysol or carbolic acid solution.

Place a nail on either side of the barrel, tie a long shoe lace to the rear nail, wrap the string about the bird's wings, place a "half-hitch" about the shanks and draw the string as taut as a fiddle string and tie to the front nail. The bird is now ready for the knife, its body is stretched out with the left side up. After removing a few feathers in front of the thigh, an incision about one or two inches long is made between the last two ribs. Care should be taken to hold the heavy hip muscle back over the thigh to prevent cutting the muscle which would cause bleeding. If the bird has been properly starved the two tissues covering the intestines can be torn with the hook. The testicles can then be seen. It is creamy yellow, about the size of a large grain of wheat or a small bean. When the testicle is firmly clamped in the extractor, the instrument should be turned around completely several times. This draws out the cord, prevents bleeding, and insures complete removal. If even a small part of the testicle remains in the body, the bird continues to "comb-up" and will crow. It is not a true capon but is called a "slip" and sells for less money.

The incision needs no sewing up. The hip muscle will slide back and cover the wound. The wings also protect it.



Figure 11—Club Member Caponizing

Care After Operation—After the operation, the birds are put in a clean place where they will not fly and feed on soft feeds and milk for several days. The birds should be watched for "wind puffs"—that is, air gathering under the skin. If these occur the skin can be pricked and the air pressed out.

Growing and Fattening—Capon are fed the same as growing pullets and housed in a range shelter.

During the 10 days before marketing the capons can be put on a fattening ration. Use available ground grains with enough flour or middlings to make a batter when moistened with milk. Feed three or four times a day.

Killing and Marketing—Capon are marketed in January or February, preferably with the after-Christmas shipment of turkeys. Capons must be held off feed for 18 hours before killing, with plenty of water to drink. Most markets prefer dry picked birds. If they are shipped to outside markets they must be dry picked. (Reference bulletin 101 "Turkeys in Montana," Montana Extension Service).

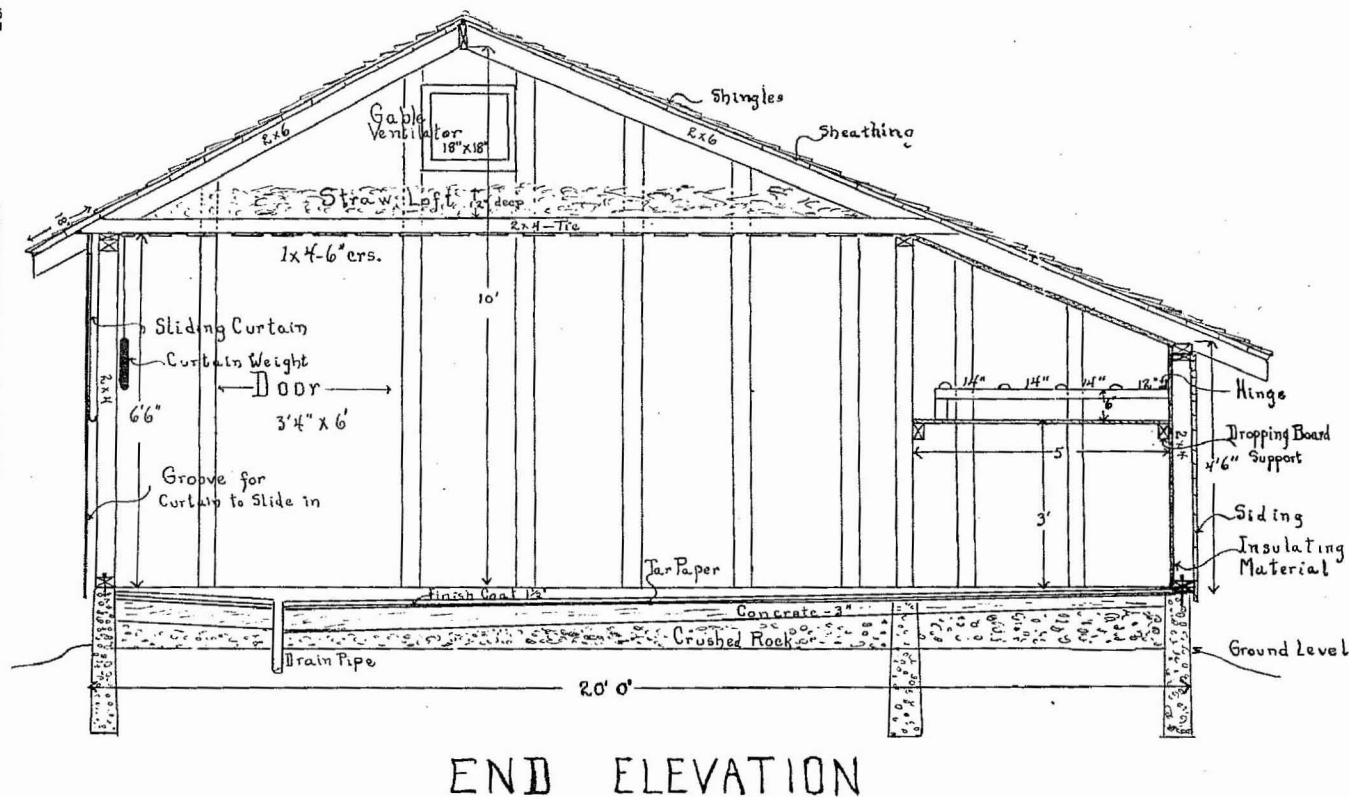


Figure 12--Montana Type Poultry House.

THE LAYING HEN

The House

For Montana conditions where we have sudden temperature changes and sub-zero weather the uneven span roof with a straw loft proves the best type house for the state as a whole. With sliding curtains at the south side the ventilation can be controlled and the house kept dry.

There are certain principles to remember in housing. We want a house that is: (1) dry; (2) well ventilated, (3) has four square feet of floor space per bird, (4) warm, (5) light, (6) convenient, and (7) as cheap as possible.

The house plan shown in figures 12, 13, and 14 fulfills the principles of good housing for Montana.

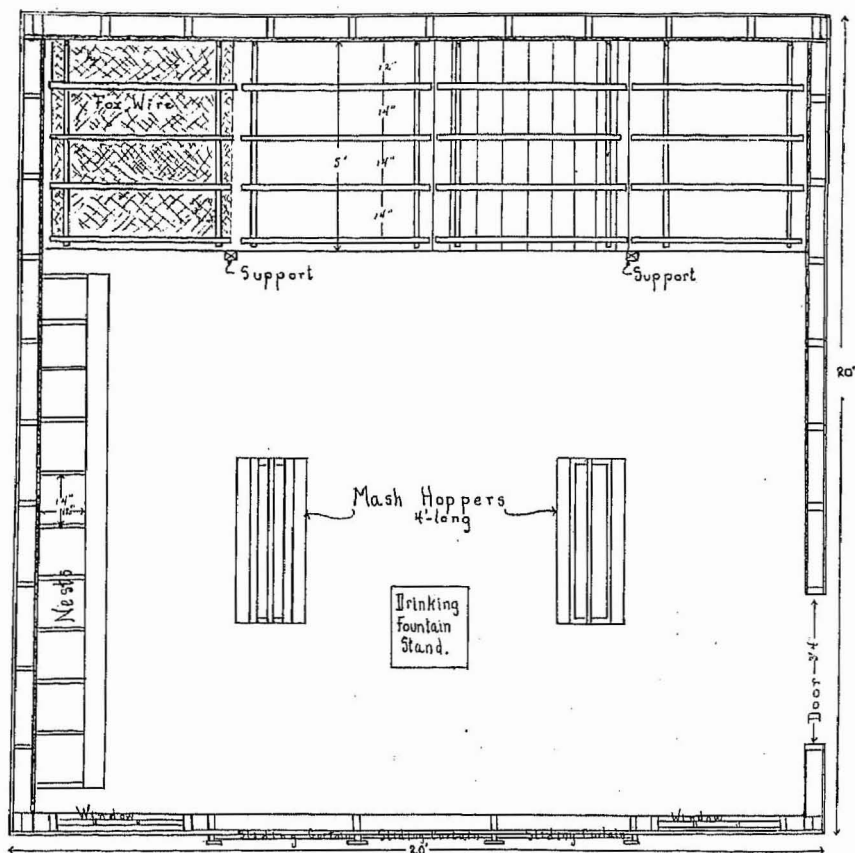


Figure 13.

FLOOR PLAN

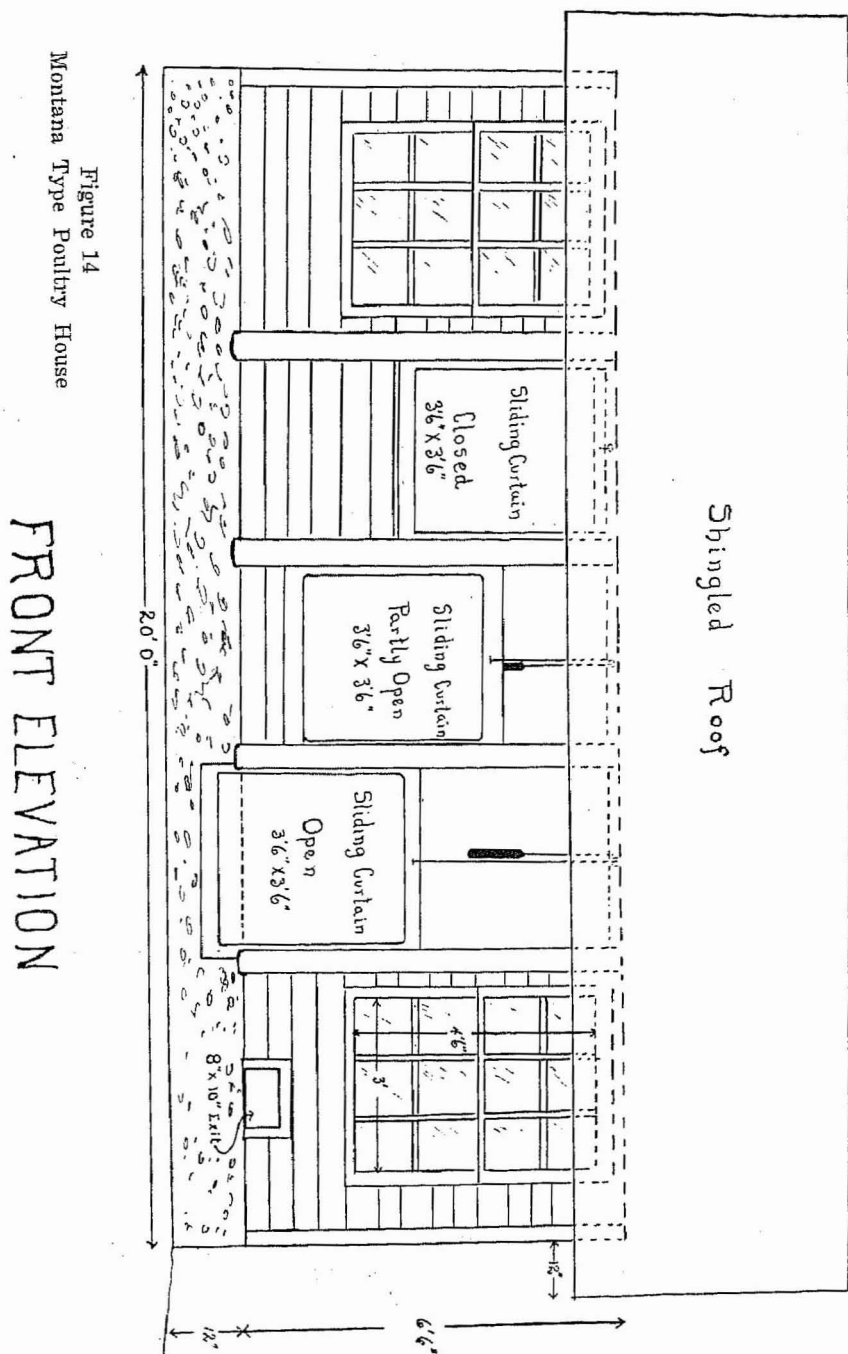
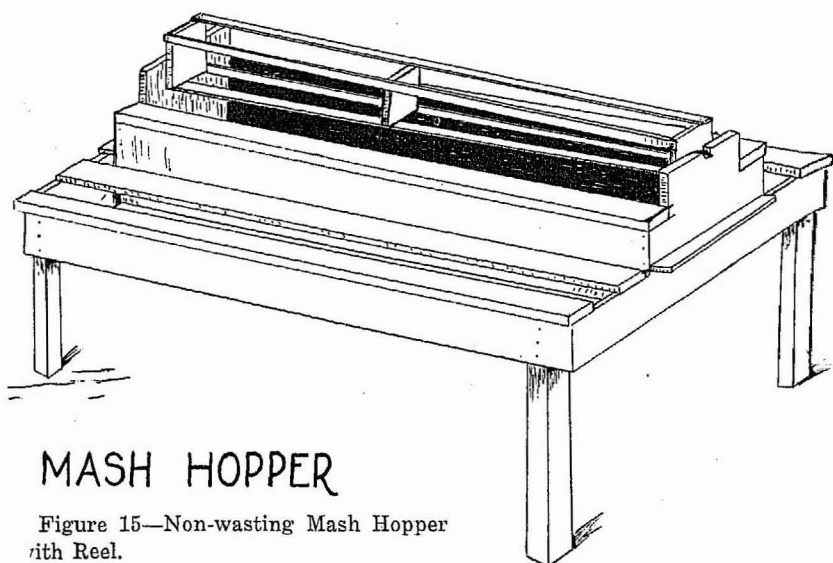
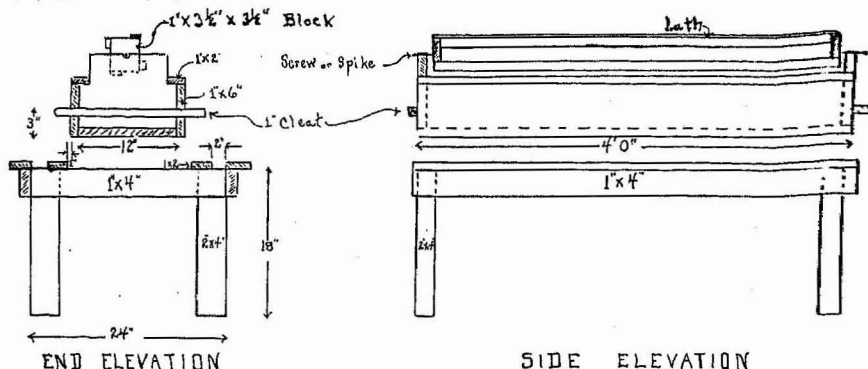


Figure 14
Montana Type Poultry House

Housing Equipment

The good poultry house is not complete until it is furnished with a **good** mash hopper, a drinking fountain, and nests. In addition, each house **should** have a catching crate, a broody coop, and a hoe to clean the dropping boards. See figures 15, 3, 16, 17, 18.



MASH HOPPER

Figure 15—Non-wasting Mash Hopper with Reel.

Bill of Materials for Dry Mash Feeder

4 pieces 2x4—18" long	2 pieces 1x6—4' long	4 plaster laths
2 pieces 1x4—24" long	1 piece 1x12—4' long	2—2 1/2 No. 10 screws
2 pieces 1x4—4' 2" long	2 pieces 1x10—12" long	1/2 lb. 6d nails
4 pieces 1x2—4' 2" long	2 pieces 1x1—18" long	
2 pieces 1x2—4' long	3 pieces 2x3 1/2 x 3 1/2	

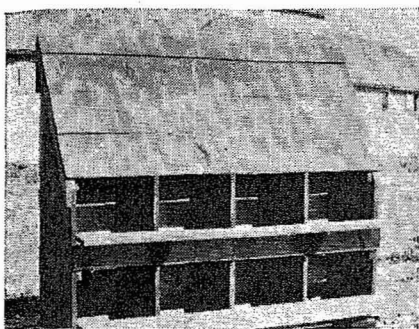


Figure 16—Open nest.

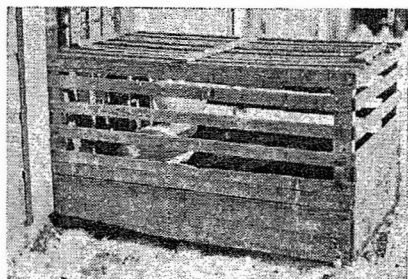


Figure 17—Catching crate.

Culling

Before the pullets are housed in the fall and again in the following summer the flock should be culled. Between these two cullings birds should be removed that get sick or have anything wrong.

Pullets—In the fall when the pullets are about $5\frac{1}{2}$ to 6 months old, birds of the same age are separated into late and early maturing groups. This cannot be done unless the chicks of each hatch are banded or toe punched, so that they can be distinguished at culling time.

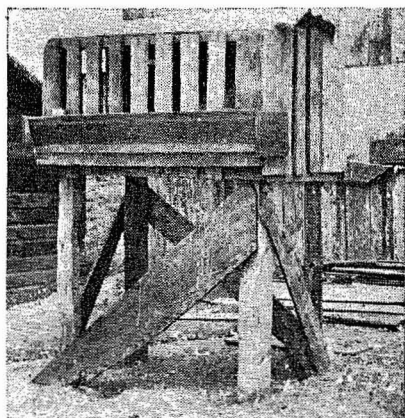


Figure 18—Broody coop.

Table Two—PULLET CULLING CHART

Part of Body	Early Maturing Pullets	Late Maturing Pullets
Back	Broad, long, well carried out	Short and pinched at tail
Body	Deep	Shallow
Eye	Bright and prominent	May be dull
Comb	Red, well developed and large	Small, pinkish, undeveloped
Legs	Moderate in length	Excessively long
Skin	Moist, has quality	Lacks quality, may be dry
Disposition	Social, first up and last to go roost	Shy, scary, inclined to stay on roosts

Adult Hens—After a hen has laid for 9 months her body undergoes changes of pigmentation and fat storage. Consequently in addition to the characteristics compared on the pullet chart the following should be added to the hen culling chart:

Characteristics	Good Hen	Cull
Pigment		
Eye Ring	Bleached (in 1 week of laying)	Yellow
Ear Lobes	Bleached (in 2 weeks of laying)	Yellow
Shanks	Bleached (in 1 to 2 mo. of laying)	Yellow
Pelvic bones	Thin, far apart	Thick and close together
Abdomen	Thin, pliable	Fat
Eyes	Bright, prominent	Listless, sunken
Face	Clean cut	Fat, pouchy
Molt	Late molter with ragged, worn plumage	Early molter

Feeding

The laying hen needs enough feed to keep up her body and enough extra to build eggs. Therefore she must have plenty of laying mash, grain, green food, minerals, and water. A laying hen will eat on the average of $3\frac{1}{2}$ pounds of mash and $3\frac{1}{2}$ pounds of grain a month. To have them consume this amount 12 pounds of grain should be fed to 100 laying hens daily, 4 pounds in the morning and 8 pounds at night with mash before them all the time.

If they do not eat enough mash the grain must be cut down. Grain is fed in deep litter. Therefore, if the hens appear to lose their appetites it is wise to clean the house. New, fluffy litter will get them to work and eat again.

There are many laying mashes. Either of the following are satisfactory:

100 pounds bran	400 pounds ground wheat, ground fine
100 pounds middlings	
100 pounds ground oats	200 pounds bran
100 pounds ground corn	200 pounds middlings
100 pounds meat scrap	100 pounds ground oats
80 pounds bone meal	100 pounds ground barley
15 pounds oyster shell	100 pounds alfalfa leaf meal
5 pounds salt	200 pounds meat meal
	100 pounds bone meal
	5 pounds salt

Either of these may be fed at the rate of about 10 pounds of mash and 12 pounds of whole wheat to 100 birds a day. Feed the mash in a non-wasting hopper and the whole wheat in a trough or in the litter giving them 4 pounds in the morning and 8 pounds at night.

Egg Grading and Marketing

Hens are kept primarily for egg production. However, to make a success from hens, the 4-H club member must not only have hens that produce many eggs but he must also produce and market these eggs so that they will grade "specials" or No. 1 grade.

How To Get the Special Grade

1. To get the top grade, sweet, clean feeds must be fed. Musty or moldy feeds or feeds with strong odors make poor eggs.
2. Clean eggs grade specials. This is accomplished by:
 - A. Putting wire netting under perches to keep hens off the dropping boards.
 - B. Closing nests at night.
 - C. Having clean nesting material and plenty of it.
 - D. Having plenty of nests (one to every five hens).
 - E. Putting lime or gysum on the perch in front of the nests.
 - F. Collecting the eggs at least once a day.
3. Properly held eggs grade specials. This means:
 - A. Holding in a well ventilated place but not too dry.
 - B. Avoiding a dusty storage room.
 - C. Keeping vegetables and kerosene oil out of the egg room.
 - D. Keeping the temperature of the egg room below 60°F. (40°-55° is the best temperature for holding).
4. Properly marketed eggs grade Specials. This means:
 - A. Marketing at least once a week.
 - B. Packing eggs in clean, unbroken cases with clean, unbroken flats and fillers. (Cup flats are preferred).
 - C. Carrying eggs to market without unnecessary jolting.
5. Being paid on grade requires that:
 - A. Either receive only partial payment at time of delivery.
 - B. Or wait until the grading agency knows what they can receive for the eggs.

Note: To demand the total payment for eggs at time of delivery is to keep egg marketing on a guessing basis and where the full value of the product cannot be received.

THE MONTANA EGG GRADES ARE BASED UPON THE U. S. STANDARDS OF QUALITY FOR INDIVIDUAL EGGS FORMULATED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE

20

The following table gives such U. S. Standards and shows the relationship between the Montana egg grades and the U. S. Standards of quality for individual eggs.

Grade Factors	MINIMUM REQUIREMENTS			
	U. S. Specials*	Extras*	Standards*	U. S. Trades†
Shell	Clean, sound	Clean, sound	Clean, sound	Clean or dirty; cracked but not leaking
Air Cell	$\frac{1}{8}$ in. or less, localized, regular	$\frac{1}{8}$ in. or less, localized, regular	$\frac{3}{8}$ in. or less, localized, may be slightly tremulous	May be over $\frac{3}{8}$ in., be bubbly or freely mobile
Yolk	May be dimly visible	May be visible	May be plainly visible, mobile	May be plainly visible; dark in color, freely mobile
White	Firm, clear	Firm, clear	Reasonably firm	May be weak and watery
Germ	No visible development	No visible development	Development may be slightly visible	Development may be clearly visible but no blood showing

MONTANA EXTENSION SERVICE

*U. S. Standards of Quality for Individual Eggs.

†Includes U. S. Trades, U. S. Standard Dirties, U. S. Checks (U. S. Standards of Quality for Individual Eggs).

The term "large" or any term of similar import shall not be applied to any lot of eggs in connection with a sale, offering for sale or advertisement for sale, unless the eggs weigh at the rate of not less than 24 ounces per dozen.

The term "medium size" or any term of similar import shall not be applied to any lot of eggs in connection with a sale, offering for sale or advertisement for sale, unless the eggs weigh at the rate of not less than 20½ ounces per dozen.

The term "small" or other term of similar import must be applied to any lot of eggs in connection with a sale, offering for sale, or advertisement for sale, if the eggs weigh at the rate of less than 17 ounces per dozen.

Exhibiting and Shows

Every club member should plan sometime during his or her poultry club career to prepare birds for exhibition and show them at some fair or poultry show. If possible the entry should be made in the open classes since by so doing, more can be learned and greater benefits can be derived. A poultry show is a poultryman's best form of advertising.

The American Standard of Perfection is the official guide for the requirements of each breed and variety of poultry. Therefore each member should study the section of this book referring to his or her own birds before exhibiting so that the member may not only know the breed requirements for each section of the bird, but may also know what disqualifications and defects to avoid.

Members should also know how to prepare birds for showing.

White birds should be washed. In washing birds it is important to use pure soap, such as ivory or castile, and soft lukewarm water. The soap should be dissolved in the water. Birds should never be soaped.

Thorough rinsing is also very important. Birds should be rinsed in at least three waters, so that the feathers will fluff up when dry. If some soap is left in the feathers the birds will appear sticky when dry. The last rinse may contain a little bluing.

After washing, the surplus moisture should be absorbed in towels. Do not rub the birds as the feather barbs will be injured and the dried feather will not look smooth.

All birds should have their feet and combs groomed before showing and their feathers smoothed with a silk cloth.

The following makes an excellent grooming liquid:

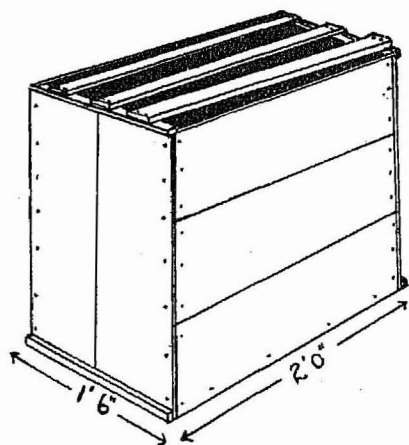


Figure 19.

Cooking oil—2 ounces

Grain alcohol—1 ounce

Acetic acid—1 dram

Shake well before using. Rub the legs, face, and comb to remove dirt and loose scales. Then polish with a woolen cloth.

Every member should make a roomy durable shipping coop for each show bird. It should be made large enough for the bird to be comfortable but not large enough for it to turn around and spoil its plumage. (See Fig. 19).

POULTRY DISEASES AND PARASITES

A sick bird is worse than a liability. It does not lay, it will not grow normally, it eats but returns no profit. But worse than this, its presence is a constant source of danger to the rest of the flock. Therefore, an ailing bird should be disposed of at once.

Before getting rid of it, however, the club member should try to find out the cause of the sickness. If the external symptoms are not sufficient to make a diagnosis the bird should be killed and a post mortem examination made so that the member may know how to control the trouble and how to prevent future outbreaks.

A disease control program consists of:

1. Removing cause.
2. Isolating sick birds that are worth saving.
3. Giving unaffected birds treatment to prevent them from becoming ill.

The causes of poultry troubles are mainly as follows:

- A. Diseases caused from houses that are—drafty, poorly ventilated, damp, crowded, infested with lice and mites: diseases of the nature of colds, roup, bronchitis, diphtheria, pneumonia and tuberculosis.
- B. Diseases caused by wrong feeding:
 - (1) Lack of green feeds—leg weakness, rickets and nutritional roup, colds.
 - (2) Too much animal feeds—gout.
 - (3) Spoiled feeds—limberneck and paralysis
- C. Troubles caused by contaminated soil, water and floors:
Tape and roundworms, tuberculosis, black head, coccidiosis, bacillary white diarrhea, fowl typhoid and cholera.
- D. Inherited troubles—Bacillary white diarrhea.
It would take a book to describe the particular diseases resulting from the above causes and their treatments. Consequently only information that can be condensed into a chart form is included here. This chart may be of help in diagnosing poultry troubles and carrying on disease control programs.

The most important factor in any disease control program is **ABSOLUTE SANITATION**. This is maintained by having:

1. Clean house—disinfected with a good spray
2. Clean yard—by moving the house or scraping the ground.
3. Clean water and clean feed.
4. Clean birds—preferably B. W. D. tested.

Diagnosis Chart

Disease or Trouble	Symptoms	Cause	Treatment	Prevention
Aspergillosis (in brooder chicks)	Alive—Dumpy and sleepy whitish diarrhea Dead—Lungs darkened or pus in them	Mouldy litter or feed	None	Remove cause and keep house clean and dry.
Bacillary White Diarrhea or "Pullorum" disease	Alive—Dumpy and sleepy; get the disease within first 10 days, diarrhea, feathers rough. Dead—Liver often yellow streaked, only microscopic examination positive diagnosis.	Chicks from infected eggs or contact with infected chicks.	No cure, but chicks helped by milk diet, dry, warm brooder.	Test hens.
Bloody spots in eggs	Bloody spots seen in candling.	Lack of green feed or cod liver oil, too much animal feeds, fright or over-production	Give 2% cod liver oil and cut down meat scraps	Never force production.
Bronchitis	Rattling in throat, difficult breathing	Drafty or over crowded quarters	Keep warm, relieve with an inhalant such as eucalyptus oil on boiling water.	Correct housing.
Bumble foot	Swollen pad of foot, temperature in foot.	Jumping onto hard floor, pus in the injury	Poultice foot or paint with iodine to bring to a head, lance, remove core, wash with iodine or B-K.	Provide clean litter.

DIAGNOSIS CHART (Continued)

24

Disease or Trouble	Symptoms	Cause	Treatment	Prevention
Canker	Cheesy material in the mouth.	Injuries from fighting or bearded grains or colds.	Remove material from mouth with cotton swab dipped in disinfectant.	Treat injuries before canker sets in.
Coccidiosis (appears from 4 weeks to 2 months)	<p>Alive—Bloody droppings, dumpy, rough feathers.</p> <p>Dead—Inflamed intestines, cheesy material in blind intestines, must be confirmed by microscopic examination.</p>	Coccidia in contaminated soil may live in soil 5 years.	Kill sick birds, put on 40% milk diet for 10 days, keep brooder house warm. Clean brooder house daily.	Brood on clean soil, in clean, dry house.
Colds (Chicks and adults)	Dust sticking to the nostrils, sneezing, tears in the eyes, feathers ruffled	Drafty houses, overcrowding, faulty feeding (also in chicks chilling or overheating) conspitation and lack of green feed.	Treat at once, otherwise roup, bronchitis, pneumonia or diptheria may develop. Isolate sick birds, correct feeding, disinfect feeding and water pans give well birds dose of epsom salts (1 lb. to 100 birds).	Keep clean, dry, well ventilated house, feed plenty of green feed.

DIAGNOSIS CHART (Continued)

Disease or Trouble	Symptoms	Cause	Treatment	Prevention
Comb frozen	Swollen, darkened comb	Damp, cold house	Rub carefully with fingers smeared with vaseline, keep in cool place, anoint twice daily with ointment: 5 tablespoonfuls vaseline, 2 tbsp. glycerin, 1 tbsp. turpentine	Keep house well ventilated.
Constipation	Droppings too hard, loss of appetite, difficulty in laying eggs, extreme cases loss of use of legs.	Not enough green feed.	1 pound of epsom salts to 100 adult birds	Plenty of water and green feed.
Crop bound	Crop hard and sticking out.	Stoppage below crop or too much fiber, such as wheat stalks.	Massage the crop, give sweet oil or castor oil. Severe cases—open and remove material.	Don't feed too much fibrous feed.
Crop pendulus	Crop filled with vile smelling liquid.	Spoiled feed or undigested feed.	Empty crop, wash, give castor oil.	Give clean feed, prevent constipation.
Depluming Mite	Feathers broken off, skin bare.	Mite living at the feather ends.	Rub carbolated vaseline thoroughly into skin.	Clean house and clean hens.
Dropsy	Hens walking like a duck, abdomen filled with liquid.	Not known.	None.	None.

DIAGNOSIS CHART (Continued)

Disease or Trouble	Symptoms	Cause	Treatment	Prevention
Jaundice	Yellow combs and wattles.	Continued congestion of the liver from wrong feeding, especially green feed.	Give epsom salts, followed by plentiful supply of green feed daily	Never allow the flock to be without green feed.
Lice	Ruffled feathers, feather picking.	Body louse, lice eggs found on feather shafts on fluff feathers below the vent.	(1) Sodium Fluoride by pinch method, pinch in fluff feathers, one under each wing, back of head and along the back. (2) "Black Leaf 40" painted in thin line down the roost $\frac{1}{2}$ hour before birds go to roost.	Never allow lice to get a start.
Limberneck or Botulism	Bird loses control of neck and leg muscles.	Spoiled feed or dead meat, or poisoning or constipation.	Individual treatment. 1 tsp. castor oil at once. Put in a warm place by itself. Give only warm, sweet milk until better. Flock treatment—for fear others got the same feed give epsom salts 1 lb. to 100 birds.	Keep poultry yard free from dead birds and animals. Feed only clean feeds. Avoid constipation.

DIAGNOSIS CHART (Continued)

Disease or Trouble	Symptoms	Cause	Treatment	Prevention
Mites	Very thin birds, pale often walking unsteadily because of loss of blood.	A mite that lives in cracks during the day and looks like grey dust. Feeds on the birds at night then looks red as it is filled with the birds' blood	Take all moveable fixtures out of poultry house and scrub with hot lye water. Brush all dust and dirt out of cracks. Then paint or spray with waste crank case oil.	Never allow mites to get a start in the house.
Nutritional Roup	Alive —Occurs in both young and old birds, swollen head, cheesy material in eyes, white patches in throat membrane. Chicks eyes stuck together, paralysis. Dead —Kidneys sparkle and are swollen.	Lack of green feed or in very small chicks lack of green feed in the mother's diet.	Add 1 to 2% cod liver oil to the diet, either in mash or coat the grain. Mix only the amount to be used each day, or plenty of good alfalfa.	Avoid lack of Vitamin A.
Roundworms	Alive —Lameness, blindness, diarrhea, ruffled feathers. Dead —Long, white, round worms in the small intestines.	Worm eggs picked up from contaminated ground or feed. Worm eggs live in soil for years	Reliable roundworm eradicator pills or capsules or 2 lbs. of tobacco dust in 100 lbs. of mash feed daily for three weeks.	Keep poultry on clean yards.

DIAGNOSIS CHART (Continued)

Disease or Trouble	Symptoms	Cause	Treatment	Prevention
Roup	Swollen eyes and face, nostrils clogged, hackle feathers soiled, disagreeable odor.	A cold that is allowed to run. Overcrowding, drafty houses, bringing home birds from shows that have been exposed to roup.	Destroy sick birds. Correct conditions. Disinfect house, feeding and water dishes. Give all well birds epsom salts 1 lb. to 100 birds. Give correct diet.	Keep house clean, dry and well ventilated. Never put strange bird in a flock until it has been quarantined for 10 days.
Rickets or "Leg Weakness"	Leg weakness, birds down on their hock joints and can't walk.	Lack of sunshine, lack of Vitamin D.	Give 1 to 2% cod liver oil, give plenty of green feed, get birds out into the sunshine on a green yard.	Supply birds with Vitamin D and direct sunlight.
"Scaly leg"	Scales on legs, raised with crusty material under the scales.	Scaly leg mites living up under the scales on the legs.	(1) Soak in warm soapy water; brush out crusty material with stiff brush, rub in carbolated vaseline or an ointment made of lard and kerosene oil. (2) Place a pan of kerosene where the birds have to wade through it to go in and out of the poultry house.	Keep house clean, never keep scaly legged birds.
Sod Disease found in young chicks.	Feet swollen and sore.	Gumbo or alkali runs.	Remove chicks to new quarters, apply iodine to sore places.	Keep chicks off gumbo or heavy sod.

DIAGNOSIS CHART (Continued)

Disease or Trouble	Symptoms	Cause	Treatment	Prevention
Tapeworms	<p>Alive—Thin, lame, ruffled feathers, diarrhea.</p> <p>Dead—Segmented, flat worms in upper part of intestines, highly inflamed intestinal wall.</p>	Tapeworms acquired from flies, angle worms or beetles that have previously eaten tapeworm eggs.	For adults—one 15-grain capsule or tablet of kamala. Growing chicks—1 lb. or less, $\frac{1}{4}$ or $\frac{1}{2}$ dose, depending on size of bird.	Screen against flies and raise on wire floor if tapeworms are present.
Tuberculosis	<p>Alive—Very thin, lame, diarrhea, ruffled feathers.</p> <p>Dead—Yellowish spots on liver and spleen. Nodules or bumpy places on the intestines.</p>	Germ— <i>Bacillus tuberculosis</i> . The germ in droppings from infected birds is picked up by well birds.	None—kill and burn all infected birds. Disinfect poultry house thoroughly, move to clean ground or scrape off top dirt around poultry house. Raise chicks artificially.	Keep house clean and well ventilated. Never borrow broody hens from unknown flocks.