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TURKEY GROWING IN IDAHO

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AMERICAN families regard the turkey as their holiday meat; therefore, the quality and finish must be the finest.

Aged hens are better breeders than young ones. Breeding stock that is nearest standard weight, if vigorous and conforming to the ideal for the breed, is best. Select breeding stock early. Keep the best.

Separate breeding stock from the general flock before finishing the market stock is begun. Breeding stock must range freely and be furnished green feed.

The good turkey grower is a good feeder. Greens to the extent turkeys will consume is a prime factor in a good turkey feeding program.

Prepare nests out on the field, on the ditchbank or in the sagebrush.

There is no easy way to raise turkeys.

Equipment and improved methods may increase volume and improve the quality of stock, but are not likely to reduce labor to any marked extent.

Suitable equipment for turkeys is not expensive. It is poor economy to hatch poults and then lose them on account of poor or entire lack of equipment.

Do not give setting hens too many eggs. Make proper preparation for setting hens. They must be able to keep warm. They must not be annoyed by animals.

Sanitation is the controlling factor in maintaining the health of the flock.

Artificial turkey growing is a safe practice when properly done.

If artificial brooding is practiced it must be done in small units. One hundred and fifty poults to the unit is the limit and a smaller number is much safer.

Poults should not be fed wet and sloppy feeds. Sour milk and dry grains are best. Oyster shell and bone meal in liberal amounts and in the mash are necessary for proper bone development.

Poults require an abundance of succulent green feed. Feed cod liver oil. Give poults a good start. When poults are full-feathered and the weather will permit put them on range.

Do not permit poults to suffer from thirst. Start the finish for market with the first feed.

Most diseases are preventable. Sanitation, good management and proper feed are the important factors. Feed turkeys in troughs and hoppers. Never feed on the ground.

A practice that has proven successful should not be discarded until another is known to be better.

*Turkey Growing in Idaho.

By PREN MOORE, C. E. LAMPMAN, DR. E. M. GILDOW, and HOBART BERESFORD

THE FACTORS that limit turkey growing in Idaho are range limitation, lack of experience, misleading information, poor breeding, indifference to details in practices and poor finish of the market stock.

In order that the most satisfactory results may be obtained, it is important that the factors involved be understood. The most important are: (1) Breeding, (2) Conditioning of breeding stock, (3) Handling breeding stock during the breeding season, (4) Brooding, (5) Incubation, (6) Feeding the poults, (7) Range, (8) Finish, (9) Killing and dressing, (10) Disease. (11) Sanitation. (12) Marketing. Each factor has its influence in determining the value of the stock when mature. Turkeys are grown for their value as meat. Egg production is a consideration only as it affects reproduction.

The purpose of this bulletin is to encourage economy in production, improvement of quality, satisfactory marketing and general stabilization of the turkey industry and to give information that will assist growers to achieve these objectives.

PRICE FLUCTUATIONS

The nature of the industry appears to stimulate abnormal inflation and contraction in production. Turkey prices fluctuate from year to year. Prices apparently rotate in rather irregular cycles. Supply and demand are the natural influences, the latter often influenced by industrial conditions. A short supply may be affected by a general labor strike or other industrial disturbances. Interest in turkey production increases with advancement in price. Periods of high price bring new growers. Many people plunge in on a large scale without previous experience. It is not uncommon to see people with no previous experience start with fifty or more breeding hens. The successful grower is the one who develops slowly or in proportion to his accumulation of information and experience. To be

* The manuscript and drawings for this bulletin were prepared by Pren Moore, Extension Poultryman; C. E. Lampman, Professor of Poultry Husbandry, College of Agriculture; Dr. E. M. Gildow, Professor of Veterinary Science, College of Agriculture and Hobart Beresford, Professor of Agricultural Engineering and Agricultural Engineer of the Experiment Station.

successful, one must be able to ride the price waves. The safest time to increase volume is when the price cycle is at the low point. The crop is almost certain to be short immediately following low prices. Prices fluctuate and no one appears to be able accurately to forecast low markets. A steady, substantial development of the turkey industry in Idaho appears safe for anyone interested.

IDAHO CONDITIONS FAVORABLE FOR TURKEYS

Idaho has every natural advantage for turkey growing. The extent to which the industry may be developed in the state is limited only by location and by the inclination and ability of the persons interested. In southern Idaho the land is gravelly in character. There are wide expanses of range; feed is abundant; the growing season is long; spring comes early, usually is dry and there is an abundance of sunshine. Southern Idaho is favored with an unusually early hatching season for turkeys, an advantage when compared with many other sections where turkeys are grown.

Idaho turkeys are superior in quality. No other section produces finer quality and there are few that grow as fine. The national crop may be large at times, but it seems probable that Idaho quality always will bring a premium. Low grade stock is always a drag on the market and off-grade Idaho turkeys are probably no better than the off-grade stock of any other section. The problem of Idaho turkey growers, therefore, is to grow the quality stock that the state is capable of producing.

Turkey mortality each year is very great. This is true, not only of poults, but of breeding stock. The turkey grower needs to improve the quality of his stock and to reduce mortality. Should the practices recommended herein differ from those in use by a grower who has been successful over a period of years, it is advised that he be reluctant to change his practice until he knows from experience that these methods are better than his own and that the changes will be advantageous.

CONSUMER DEMAND

Turkeys may be regarded as a luxury. American families regard the turkey as their holiday meat. They are used on other festival occasions and at banquets and are on the menu of the more fashionable hotels and restaurants at other seasons. However, it is the culls and No. 2 grades that are generally served by the restaurants and hotels. It is the fancy turkey that is in demand for the holiday trade. There is a spread of from 7c to 10c between grade No. 1 and

grade No. 2 and at times the spread is even more. It is obvious, therefore, that the grower's interest is served best when the bulk of his stock grades No. 1, or prime.

BREEDING

The turkey industry has two natural divisions: (1) Purebred Flocks; (2) Commercial Flocks. The purebred flock is necessarily a small unit. The commercial flock may consist of any number and is limited only by available range, feed, the grower's inclination and the available help.

PUREBRED FLOCKS

Purebred flocks are the source of breeding stock for the commercial flocks. Purebred breeding involves intensive practices. Known ancestry is essential. It is necessary, therefore, that the stock be mated in small units. The object of purebred breeders is to standardize the stock. Each breed has a weight and color standard. Weight is of the greatest economic importance. However, color is important, in that fine color marking is an indication of purity in breeding. The purebred breeder must strive for uniformity in weight. The nearer individuals of a breed conform to the standard weight for the breed, the more valuable they are as breeders, provided they are healthy and vigorous.

By proper selection of breeding stock, a strain may be so standardized as to become quite uniform in size, shape or type, quality and general conformation. Extremes must be avoided when selecting breeding stock. Breeding females and males must be as nearly standard in all respects as possible. Standard weight toms will increase the weight of undersized flocks. By the use of standard toms on undersized flocks, the size may be brought up to the standard for the breed in a few generations, often in two or three. However, it is not practical to use oversized males to correct the deficiency of undersize in any flock. Oversized toms produce stock that is too leggy, flat bodied and slow to finish. Stock that is standard matures and finishes quickly.

The standard weights for Bronze turkeys follow: young toms, 25 pounds; yearling toms, 33 pounds; aged toms, 36 pounds; pullets, 16 pounds; hens, 20 pounds. Changing to either lighter or heavier weights than the standard tends to destroy the value of the breed. All breeds of turkeys have a standard for weight and any deviation from the weight fixed by the standard tends to lower the value. The standard weights for the other breeds are as follows: Narragansetts—young toms, 23 pounds; yearling toms, 30 pounds; aged toms, 33 pounds; pullets, 14 pounds;

hens. 18 pounds. White Hollands—young toms, 23 pounds; yearling toms, 30 pounds; aged toms, 33 pounds; pullets, 14 pounds; hens, 18 pounds. Bourbon Reds—young toms, 23 pounds; yearling toms, 30 pounds; aged toms, 33 pounds; pullets, 14 pounds; hens, 18 pounds.

AGE OF BREEDING STOCK

Aged hens are better breeders than young ones. They will not lay as many eggs as will young ones, but they will produce stronger poults and the stock will be more uniform in quality and finish. It is necessary, however, to use some young hens each year for breeders in order to keep the flock up to the number desired. Just how long a turkey hen should be kept as a breeder must be determined by her usefulness. The breeding value of any individual is determined by the quality of its offspring. A good breeder should be maintained in the flock as long as it is useful. This should be determined each year. It is a good practice to dispose of breeding hens in a commercial flock after the second breeding season. Therefore, a little more than one-half of the breeding hens in a commercial flock each year are pullets. The same rule as the one used for females must determine the age to which males should be maintained in the breeding flock. A tom that is a good breeder should be kept in the flock as long as he is vigorous and active. Two years is long enough to keep breeding males in a commercial flock. It is a good practice, however, to use all old or all young toms in commercial flocks.

A good thing for commercial turkey growers is a tom association. By such cooperation it is possible for one grower to use a group of toms one year and pass them on to another for the next year. With five or six growers cooperating, one may use young toms one year and older ones the next. Longer service can be had from the toms and the tendency will be to buy better stock.

NUMBER OF HENS TO TOM

The number of hens to mate with one tom must be determined by the age of the toms and the purpose of the mating. In the commercial flock, from 10 to 15 hens to the tom is safe. In small flocks, a greater number of hens are often mated with one tom with satisfactory results. Purebred flocks are usually mated in smaller numbers. Males and females are mated with a fixed breeding purpose in view. Some mate as few as five and six hens to the tom and occasionally a pair mating is made. The good breeder is continually striving to effect improvement. Many special

matings are made with a view to intensification of the good qualities of a few individuals. By small matings the results may be more definitely known and the blood lines maintained. Turkey growers in general are dependent upon the purebred breeder for improvement of the stock.

SELECTION OF BREEDING STOCK

The purebred breeder uses only those individuals that conform to the ideal. Color, type and standard weight are the points for consideration. The commercial turkey grower may not be so concerned about fancy points in color. However, the desired color is an indication of purity and while color may not appeal to the unimaginative as being important, it is a fact nevertheless that the specimen that conforms most nearly to standard color is likely to be more dependable as a breeder. It is not necessary that the hens be purebred in a commercial flock, but it is important that they conform to standard in type and weight. Purebred hens are an improvement. On the other hand, it is claimed by some good authorities that some wild blood in commercial flocks is an advantage. Breeding males that are purebred are always best for commercial flocks. Standard type and weight also are essential.

All breeding stock selected, either for purebred flocks or for commercial flocks, must be vigorous. Bone is essential. One should select strong, sturdy individuals and keep as near the standard as possible. They must be well up off the ground on stout legs. Legs that are too short are to be avoided, as well as the excessively tall birds. The individuals with large bones in the legs and flat bones in the shanks are best. Round shank bones are to be avoided. The toes must be large and well spread when the bird is standing on the ground. The thighs must be large and well muscled. Watch the birds walk and reject those that show a tendency to knock knees. Select the individuals that walk with a straight stride. Reject the birds that wabble too much on their legs when walking. Spring of rib, indicated by the width of back just back of the wings, is desirable. Select for wide backs and broad, firm hips. The body must be deep, yet well rounded. The choice meat of a turkey is on the breast. Select breeders with deep, broad breasts. Reject as breeders all birds with crooked breast bones. The head is an important adjunct to consider when selecting breeding stock. A deep, broad skull, a wide, stout beak, large brilliant eyes and a full, strong face are indications of vigor and ruggedness. Birds that have long, slim heads

with hollows in front of eyes and small, dull eyes are low in vitality and are not fit for breeders. The points covered herein apply to both males and females. The commercial turkey grower may sacrifice color, but breeding stock that has vigor, standard type and weight is as necessary as feed to develop good market turkeys.

WHEN TO SELECT

Early maturity should be sought when selecting breeding stock. It is obvious, therefore, that the selection must be made at the time when the stock is reaching maturity. Eliminate all slow maturing birds. Rapid maturity is an indication of vitality. Slow maturity is an indication of weakness. The tendency to use slow maturing birds for breeding purposes must be overcome. The strongest individuals must be mated together to insure the development of rugged strains of stock. A good practice is to make frequent selections, banding the most promising individuals early and then, as defects become noticeable, the process of elimination may be applied. Select stock with a view to uniformity. Early selection makes it possible to eliminate off-types and abnormally large or small individuals.

CARE OF BREEDING STOCK

Separate breeding stock from the general flock before the finishing of the market stock is started. Range the breeding stock to themselves. Unlimited range that is free from contamination appears necessary. However, some claim to be successful with breeding stock that is confined to small areas. Arrange to feed away from the farm buildings and other poultry. Breeding turkey stock appears to thrive best when roosting in the open air. A plan for perches is shown in Fig. 3 which appears to be the most satisfactory roosting arrangement.

NESTS

Most of the turkey growing area of southern Idaho is destitute of wooded growth other than sage brush. It is necessary, therefore, to arrange nests for turkey hens. Some growers confine the hens to small areas during the laying season, as a convenience in securing the eggs. It is necessary for the purebred breeder who has a number of small matings to handle the stock in a manner so as to keep them in separate groups as they are mated. Some plan must be provided which will make it possible to identify the eggs from the different individuals. It is necessary, therefore, for the purebred breeder to confine the stock to small areas during the breeding season. Provision must be made

for exercise and perfect sanitation. The space for each lot must be as large as conditions will permit.

It is better for the commercial grower to allow the breeding stock to range at will. There are no easy ways to handle turkeys. Improved equipment brings better methods and increases the volume, but it is not likely to effect a very great saving in labor. The number of turkeys developed and their quality is the goal for every turkey grower. The breeders should be allowed to run at large. Suggestive nests along the ditch banks or out in the sage brush are advisable. Drive four stakes in the ground and box three sides with boards or burlap, leaving the south side open. Cover the top with boards and then cover all over with brush or straw. Dig a hole for the nest, and provide a liberal amount of straw or leaves. Herd the hens toward the nests and they usually will take to them at once. Drive a tall stake near each nest, to which tie a piece of cloth and the nests will be easily found. Some hens will insist on going to stacks or farm buildings to lay. Permit them to follow their inclination at this time and obtain best results.

Gather the eggs each day. Eggs that are left in the nest may be destroyed by animals or chill and freeze. By gathering the eggs each day the hens are likely to lay longer before going broody. Set the hens as they become broody. Turkey hens make better turkey mothers than do chicken hens. The second clutch of eggs are late, the poults difficult to raise, the mortality high, the stock matures late and the quality usually is poor. It is better economy to succeed in raising a high per cent of the poults hatched and to produce a high quality in the stock raised than it is to hatch large numbers and then sustain a heavy mortality and to produce a large volume of cull stock. Meat of high quality is the aim of the turkey grower. Much better results are obtained under conditions where it is necessary to restrict the roving tendency of turkeys when they are growing than where they must be forced away from the farm buildings. Turkey mothers are inclined to rove while chicken mothers are more domestic and it is difficult to force them out with their young.

FEEDING BREEDING STOCK

The breeding stock must be kept in good flesh. Separate them from the general flock when starting to finish for the market. Grain feeding may be sufficient during the fall and early winter months. However, some sour skim milk and plenty of green feed will improve the ration. Yellow corn is the best grain for turkeys, although a mixture of

equal parts wheat, corn and barley is good. Steamed and rolled barley and sour skim milk are fed by some turkey growers with excellent results. Barley is steam rolled to prevent waste. There is a heavy loss when dry rolled barley is fed to turkeys. Feed milk in the long troughs that are equipped with legs. A plan for a good milk and grain feed trough is shown in Fig. 4. Feed rolled grain in troughs or hoppers. Turkey hens will start laying earlier if they are fed a laying mash. Any good laying mash that is good for chicken hens is suitable for turkeys. Provide oyster shell and place it in troughs where it will be convenient Turkeys require great quantities of green bulk. When green feed is lacking, the tendency is to over-eat of grain, if available. Breeding stock should not be starved to avoid over-feeding on concentrates. Plenty of green bulk will avert the danger of over-feeding on concentrates. Better fertility and hatching results may be expected when ample green feed is supplied breeding stock.

Alfalfa leaves for winter feeding are available to all the turkey growers of Idaho. Alfalfa leaves should be supplied breeding turkeys throughout the winter. A supply in feeding racks is the best way to feed alfalfa leaves to insure a constant and ample supply.

Cod liver oil placed on the grain in the amount of one pint to each 100 pounds is a good feeding practice. Increase the cod liver oil to one quart to each 100 pounds of grain during the laying season. Mix the cod liver oil with the grain in the same manner as when treating grain for seed. Do not mix more than a 10-day supply at a time.

INCUBATION

Natural Incubation: Natural incubation is a method in common practice for hatching turkey eggs. However, artificial hatching is growing in popularity. A good practice is to set the turkey hens when they become broody and supplement them with either chicken hens or incubators or both. As soon as there is sufficient volume of eggs, set them. By the time they hatch, there likely will be enough broody turkey hens to take the poults. Turkey hens will usually mother poults after they have been broody but a few days.

When turkey hens are to be set they should be moved to a place where they are comfortable and are protected from annoyance by children or animals. The plan shown in Figs. 5 and 6 has proven very successful as a battery in which to shelter turkey hens while sitting. Each

hen is in a compartment three feet wide by eight feet long. She has the advantage of protection from the wind and storm, as well as annoyance from animals or children. Each compartment is quite open, admitting sunlight and fresh air. The battery may be located at some convenient place. The plan may be enlarged to accommodate any number of hens.

After the hen has gone broody, allow her to sit for two or three days, or until she has demonstrated that she will stay with the nest, before moving her to the battery. Always move broody hens after dark. Prepare the nest by scooping out a place in the ground and lining it with straw. Warm a few eggs and place in the nest. After the hen has sat on these eggs for a few days, the turkey eggs may be placed under her. Turkey hens handled in this manner seldom cause any trouble. Provide some grain for feed in each compartment. Some green feed is necessary also. Equip each compartment with a drink fountain, which is an open can hung by a nail. Provide clean, fresh water each day.

Equipment is Necessary: The loss of poults each year is very heavy. The cause for most of the loss is lack of proper equipment. Suitable equipment is not expensive. One good turkey will bring enough money to buy the material to build the necessary equipment for one hen. Losses of several hundred poults from a flock in a year are not infrequent. It is economy to build equipment and save the poults.

Number of Eggs for Hen: Eight to 10 eggs for chicken hens and 13 to 18 for turkey hens are enough, depending upon the size of the hens, the season of the year and the nest accommodations. Many poor hatches are the result of hens not being able to keep their eggs warm.

Set four or five or more turkey hens at one time and set a few chicken hens at the same time, or an incubator or both. By setting in this manner, it will be possible to give each turkey hen her capacity of poults to brood.

Remove Poults as they Hatch: If poults are left under the hens until the hatch is complete, many of them may be crushed. They may get out of the nest and attract neighboring hens and cause them to leave their nest. Take the poults to a warm room and keep them where they are certain to be warm and comfortable until the hatch is completed.

Artificial Incubation: Very little information of a specific nature is available regarding the artificial incubation of turkey eggs although a larger number of turkeys are hatched artificially throughout the country every year.

The following suggestions offered, therefore, must be considered as of a general nature until specific data becomes available resulting from successive trials at the Experiment Station. In general the routine of incubator operation is the same as for chicken eggs except the incubation period, which is 28 days for turkey eggs. Eggs are turned twice daily from the 4th to the 26th day of incubation. Eggs may or may not be cooled to give good hatches. If the incubator temperature remains normal, cooling is not necessary. However, if the temperature runs high, it is advisable to cool the eggs for a short period after they are turned.

Temperature: Turkey eggs seem to require about the same temperature for hatching as hen eggs. Inasmuch as embryonic development takes place in the upper part of the egg, the object is to keep this portion of the egg (in still-air machines) at about the same temperature as would be done with hen eggs. This may be accomplished by either one of two methods. First, adjust the height of the thermometer so that the middle of the mercury bulb is on a level with the top of the turkey eggs and operate the machine at the same temperature as would be recorded for hen eggs. The following temperature schedule may be used as a guide:

During the first week 101½-102 degrees.
During the second week 102-102½ degrees.
During the third week 102½-103 degrees.
During the fourth week 103 degrees.
During the last 3 days 103½-104 degrees.

Second, leave the height of the thermometer bulb the same as for hen eggs and operate the machine at from one-half to one degree lower than for the recommended temperature for chicken eggs.

In forced-draft machines the temperature is kept practically the same as for hen eggs.

Moisture: It is generally thought that turkey eggs require more moisture than hen eggs. Moisture troubles experienced in hatching turkey eggs appear to be due to either one of two extremes, that is, either too little or too much moisture. If an insufficient amount of moisture has been supplied during the incubating period, an extremely large air cell will result associated with a tendency for the

poults to dry in the shell soon after the egg is pipped. If too much moisture has been supplied during the incubating period, the air cell will be abnormally small and an excessive amount of albuminous material will be present between the embryo and the shell. As soon as the egg is pipped, this liquid fills the opening and glues the poult fast. Another indication of excessive moisture is a thickened or rubbery shell membrane.

Preliminary work at the Idaho Agricultural Experiment Station indicates that during the first three weeks the moisture requirements are only slightly greater than for hen eggs. However, during the fourth week and particularly during the period the eggs are pipping and poults hatching out, a considerable more moisture is needed than for chicken eggs. Observations thus far with small machines indicate that sufficient moisture should be present from the 26th day on to cause drops of moisture to collect on the inside of the glass in the door of the incubator. This humid condition can usually be obtained by adding hot water to sponges in flat pans in the bottom of the incubator and partially closing the top ventilator. The incubator door should be kept closed after this is done and should not be opened unless absolutely necessary until the hatching is completed. If the doors are opened, more hot water should be added.

The temperature will tend to raise slightly due to restricted ventilation and embryonic activity. This should be corrected by reducing the heat if the temperature registers over 104 degrees in sectional type machines.

BROODING

Natural Brooding: Turkey mothers appear much more satisfactory than chicken hens. Turkey hens usually will take a brood. even though they have been broody but a few days. Confine the mother to a coop and allow the poults to run out and in at will. A coop that affords some freedom of movement for the mother is best. A very serviceable plan is shown in Fig. 7. Set the tight part of the coop quartering to the storm. Move the coop often to avoid contamination. The sage brush is a good location for brood coops. The ground is free from vegetation. If the broods are located in the fields they should be on land where the grass is pastured or clipped short. Poults running out in tall grass or in tall weeds become wet and chill easily. They should not be on land that is being irrigated or allowed to run in high grain until they are feathered. Space the coops far enough apart so that the broods cannot

mix. Some turkey hens will steal all the poults that will stay with them. Twenty poults are enough for one hen. The danger in too large broods is that they become crowded under the mother and some may become over-heated.

Just how long the hen is to be kept confined to the coop must be determined by the season and the weather. If the weather is favorable, she may be turned out a short time during the middle of each day when the poults are a week old. After that, should the weather be quite warm, she may be out most of each day. It may be necessary, however, on account of inclement weather, to confine her to the coop for several days, even after she has had freedom for some time. Keep the poults dry and warm or the loss will be heavy. It is never safe to turn hens loose with their brood until the poults are completely feathered. Drive the hen into her coop each night. If they have been properly trained, by driving in each night, they will be but small trouble to get into the coop at roosting time. Close the coop at night to prevent loss from predatory animals.

Equip each coop with a canvas with which to cover the open side during heavy rains or at night when the weather is cold or extremely damp. Work eyelets in the edges of the canvas. Drive a nail in the frame of the coop for each eyelet. Space the nails so that it will be necessary to stretch the canvas when it is being placed on the coop. Use the canvas covering only when necessary.

Artificial Brooding: Sanitation is very important to any system of turkey growing. Artificial brooding is fraught with hazard; therefore, any laxness in sanitation, even though very slight, is a bid for trouble. The condition of brooder yards is of more importance than is the size. Small yards may be better than large ones, for the reason that there is less space to clean, and the cleaning is more likely to be done. Soil becomes very dusty, and unless covered with sand, becomes unsanitary. The poults breathe the dust which, in addition to the contamination and infection, produces discomfort, loss of appetite, sluggishness and lack of thrift.

Satisfactory results have been obtained by covering the brooder yard with fine sand. Each day remove the top and apply a liberal covering of fresh sand. Enough sand should be taken off each day so that all of the droppings will be removed. This practice entails much labor, but is a very important sanitary measure. Gravel beds are very suitable as brooding ground. Brooder yards should not be used two years in succession at intervals of less than two

years, except when covered with sand, removed and again replenished as already suggested. It is much safer to move to a new plot of land each year, even when the best of sanitary measures have been applied.

Wire yards are more sanitary and easier of operation than the sanded yards. It is apparent that artificial brooding is coming more into popularity and that the effect of poor sanitation is even more detrimental when turkeys are being brooded artificially than by the natural method. However, artificial brooding results have been obtained that are sufficiently satisfactory to compare very favorably with the best results obtained when brooded by the natural methods. Good results have been obtained only when the brooder house floor, feeding equipment and yards were in the best possible sanitary condition. Wire-covered yards produce the very best in sanitation. Brooder yards or sun parlors equipped with wire bottoms are shown in Figs. 9 and 10. Fig. 9 is a colony house equipped with board floor and yard with wire bottom. Fig. 10 is the large furnace type brooder house with a concrete floor and the yards equipped with wire bottoms. This type of house is permanent, and under such conditions, wire yards are the only safe sanitary provision. Straw should be used as litter. Dust, dirt or filth in any manner should be avoided insofar as possible.

Shade should be provided so that the poults may be comfortable when in the yard. Equip the brooder yards with troughs for green feed and mash. The troughs should be just outside the yard all the way around the fence. If outside the yard, they are easier filled and are more sanitary. Visitors should not be permitted to go into the yards at all. Disease is often carried on shoes and by animals. It is not necessary for attendants to enter yards equipped as suggested, except for cleaning.

The troughs are slatted on the side next to the brooder yard so that the poults can reach through for green feed and mash. The slats are close enough, however, to prevent them from getting into the troughs. Plenty of feed troughs should be provided so that there will be ample feeding space. Cover the troughs to protect the feed from rain and sun. Feeding requirements for brooder turkeys are the same as for those brooded by hens. The principal objection to artificial brooding of poults is that of inactivity during the growing season and the ill results that accompany mass brooding. It is apparent that turkeys do much better when they are kept moving. Artificial brooding under proper conditions may be made satisfactory. However,

when artificial brooding becomes a safe practice for general use, turkey meat probably will cease to be a luxury. Poults are more inclined to crowd than chicks when in brooders. They also are slower to learn to take to the brooders. Consequently, it is necessary to brood them in smaller units. One hundred and fifty birds are as many as should be brooded in one unit. One hundred or less is a safer number.

The furnace type brooder system, a plan of which is shown in Fig. 10, is especially suitable for brooding poults. If artificial brooding of poults is at all feasible. this system is especially adaptable. Any size unit can be provided and at small cost. These brooders are efficient, cheap and easy to operate. Small units can be moved at practically no cost and with but little trouble. They can be placed at convenient and practical distances. The distance between units must be great enough so that broods will not mix. Heat and ventilation requirements for poults that are being artificially brooded are about the same as for chicks, except that poults appear to require more heat on their backs for the first few days. When brooding by the furnace type, it appears advisable to use some type of canopy stove brooder for the first few days as supplementary heat. For the pure-bred breeder, artificial brooding is at times very convenient. The commercial grower may find it quite convenient to start early hatches artificially, especially when hatched in incubators.

FEEDING

Milk First: The first requirements of a poult are heat and rest. While feed in some form, and drink is necessary from the start, it is not safe to do much feeding of highly concentrated feed until the poults are from 65 to 75 hours old. The first feed should consist of sour skim milk, green feed and chick size oyster shell, beginning as nearly as possible when the poults are thirty hours old. This practice may be continued until they are from 65 to 75 hours old when they may be given some concentrated feed.

Green Feed: Poults require much green feed. Young alfalfa is available and owing to its high feed value is probably the most practical green feed for turkeys. Young clover, lawn clippings and various types of garden greens are also good. However, they should be started on the type of green feed that will be continuously available.

The greens should be cut as fine as one-quarter inch lengths, and shorter would be better. Bright. well-cured, fine alfalfa hay that has been chopped into short lengths, soaked in cold water and permitted to drain, is a splendid

substitute for succulent greens. Begin feeding greens at the same time as the first milk is fed. They should have all the greens they will consume from then on *and if so supplied there is small danger of over-feeding on concentrates;* provided, however, that concentrates are not fed in great quantity until the poults are consuming green feed freely. It is never safe to depend upon the poults to gather their own greens as they seldom consume enough in that way. The safer way is to gather and chop the greens for them. Every turkey farm of any consequence should be equipped with a hay-cutter with a capacity for cutting one-half ton of dry hay each hour and sufficient power to operate it satisfactorily.

Cod Liver Oil: Cod liver oil as a source of vitamin "D" is a liberal insurance against leg-weakness, bone deformities and many other ailments common to turkeys as a result of under-nourishment when poults. Mix one quart to each 100 pounds of feed during the first few weeks of age. Mix thoroughly so that the cod liver oil will be evenly distributed. A ten days' supply during hot weather is as much as should be mixed at one time. One teaspoonful of cod liver oil to three pounds of feed is a suitable proportion for small amounts.

Direct Sunshine Necessary: The ultra-violet rays of direct sunshine are as beneficial to growing poults as feed. These rays promote proper bone development, aid in the prevention of rickets, and stimulate growth. Sunlight passing through window glass does not have this anti-rachitic effect. The necessity of forcing the birds out of doors for short periods during cold or windy weather is not so great if brooder houses are equipped with openings that will admit the direct rays of the sun, and at the same time maintain a comfortable temperature within the room. The better plan, however, is to maintain a comfortable temperature and healthful ventilation within the brooder house and allow the poults to range out of doors in the sunshine. The drink founts and feed troughs and hoppers should be moved to the yard as early as conditions will permit. Feeding out of doors naturally encourages the poults to go out in the sunlight more than if fed in the house.

Concentrates: The feeding requirements of turkeys either young or old are not essentially different from those for chickens except that turkeys require more bulk in the form of finely cut green feed. If the practice of feeding green feed as stated is adopted, mash may be fed from the start and the scratch mixtures added when desired and the

poults may be permitted to eat at will. The principal adtantages of the mash system of feeding are convenience, labor saving, ease of sanitary control, reduces danger of over-feeding, and insures a complete ration.

Fresh Feed: Turkeys of any age should be required to clean up each feed before more is given. Accumulations of fine feed in the bottom of the trough lessens the appetite and as a result reduces the feed consumption. The better practice, therefore, is to feed frequently and in the amount that the birds will consume in a reasonable time and which will insure complete consumption of all the feed including the finer portion.

Do Not Feed Wet Feeds: It is never a safe practice to give wet and sloppy feeds. Hard boiled eggs ground and mixed with bread crumbs or stale bread soaked in milk or similar moist or wet feeds are likely to cause digestive disorders. Dry feeds with sour skim milk as a drink are much better for poults and are much safer as a feeding practice.

Feed Formulas:

Starting mashes used with milk as a drink

I.	II.
60 lbs. Ground yellow corn	40 lbs. Ground yellow corn
15 lbs. Bran (or mill feed)	30 lbs. Ground wheat
10 lbs. Ground wheat	15 lbs. Bran (or mill feed)
5 lbs. Alfalfa leaf meal	5 lbs. Alfalfa leaf meal
5 lbs. Chick size oyster shell	5 lbs. Chick size oyster shell
5 lbs. Chick size bone meal	5 lbs. Chick size bone meal
1 lb. Salt	1 lb. Salt
1½ lbs. Chick size charcoal	1½ lbs. Chick size charcoal
1 Quart cod liver oil	1 Quart cod liver oil

III.

Starting Mash Without Liquid Milk as Drink

45 lbs. Ground yellow corn
15 lbs. Bran (or mill feed)
10 lbs. Ground wheat
10 lbs. Powdered milk
3 lbs. Fish meal
3 lbs. Meat scrap (high grade)
5 lbs. Alfalfa leaf meal
5 lbs. Chick size oyster shell
5 lbs. Chick size bone meal
1 lb. Salt
1½ lbs. Chick size charcoal
1 Quart cod liver oil

IV.

Range Turkey Mash*

1200 lbs. Bran
600 lbs. Barley meal
600 lbs. Corn meal
600 lbs. Oat flour
200 lbs. High grade bone meal
200 lbs. Oyster shell (medium cracked)
100 lbs. Meat scrap (high grade)
100 lbs. Fish meal
38 lbs. Common salt
50 lbs. Chick size charcoal
50 lbs. Powdered milk.

V.

Turkey scratch mixture

Whole wheat)
) equal parts
Cracked corn)

* If turkeys have a considerable quantity of skimmed milk, the powdered milk may be eliminated.

When liquid milk is fed better growth is obtained by giving milk as the sole drink for the first week or 10 days after which time the milk is supplemented with water.

When poults are from four to six weeks of age, formula No. 3 containing powdered milk may be modified by reducing the amount of powdered milk to one-half the amount specified.

At 10 weeks of age the powdered milk may be eliminated entirely and the amounts of meat scrap and fish meal increased to five pounds of each to each 100 pounds of mash.

A scratch mixture should be fed in addition to the mash mixture after poults are from ten days to two weeks old. Feed the scratch as well as the mash in troughs or hoppers. For sanitary reasons, the scratch should not be fed on the ground or in the litter. (This statement applies to turkeys of any age.)

Feed formulas may be varied to some extent to suit local conditions. However, corn is necessary to obtain best results and the corn should be the yellow variety. If sour milk is fed through the growing period, better developed turkeys will result. In many sections of Idaho corn is not always available at reasonable prices. Under such condi-

tions, it may be necessary to feed small grains, such as barley, oats and wheat. If milk is available, the small grains may be fed with good results. Some of the best turkeys grown in Idaho are fed on milk and barley. Milk should be available any place in Idaho where turkeys are grown. If barley is the feed for turkeys, crack it for the poults and steam roll it for the older ones. Turkeys that have had plenty of sour milk and green feed, some yellow corn, cod liver oil, bone meal and oyster shell in combination with other common grains through the growing period, will show satisfactory development and finish and the percentage of deformities, such as crooked breast bones, will be small.

RANGE MANAGEMENT

Get Poults on Range: When the poults are fully feathered and the weather becomes settled, they must be permitted and encouraged to range freely. If necessary, drive them away from the brooding ground. Confine them to the coops at night for the first few days or weeks, depending on the weather and other conditions. Should it be desirable or necessary to transfer them to entirely new range, move the coops. The coops may be necessary for shelter for several weeks because of sudden storms. It pays to have the coops handy so that the turkeys can be gotten under shelter quickly on the approach of heavy storms.

Feed on Range: Feed growing turkeys some grain each day while they are on range. Grasshoppers are good turkey feed but are not sufficient. Some grain is necessary to sweeten the crop and the digestive tract. Feeding the grain evenings will encourage the turkeys to assemble for the night. If there are plenty of grasshoppers, crickets and other bugs and insects, mash feeding on the range is unnecessary. Many poor market turkeys are the result of starvation while on the range. Number 1 turkeys bring the most money. Feed is required to produce them. The good turkey grower is a good feeder. Formula No. 4 is a suitable range and finishing ration.

Provide Drink: Growing turkeys must not suffer on account of thirst. Thirst retards growth. If ranging on the desert, provide troughs and place them conveniently for the turkeys. Move the troughs as often as necessary to accommodate the turkeys. Water is sufficient unless the desert is destitute of insect life, when some sour milk will help. In the absence of both milk and insect life, feed

the developing mash in place of grain. Whether the drink be either milk or water, be sure that the supply is adequate, fresh and clean. Keep the drink troughs clean. Turkeys should not be permitted to drink stagnant water. If irrigation ditches are the source of drink, keep the water moving. Stagnant pools about the barnyard and other places on the farm are the source of many disorders and diseases of turkeys.

Green Feed: Green feed should be taken to the range. The natural supply there may be quite inadequate. Chopped green alfalfa is good. Swiss chard, spinach and rape are satisfactory and can easily be grown in quantity. Feed green feed in large quantities every day unless the supply is ample on the range.

It is never safe to depend on turkeys to gather their own greens even though the supply on the range may be adequate. The better practice is to supply fine chopped greens in troughs in the amount the birds will consume. Finely chopped, bright alfalfa hay soaked in cold water is a splendid substitute when greed feed is not available.

Start Finish Early: Turkeys are grown principally for the Thanksgiving and Christmas trade. In order that they may be ready for the Thanksgiving market, they must be hatched early, kept growing and the finish or fattening must be started early. Begin to bring them in off the range about October first or soon after harvest. Do not force them in. Gradually increase the grain each day and feed toward the stubble fields. Do not take turkeys abruptly from the range to stubble fields where there is any great amount of shattered grain. The abrupt change from old grain to new is the cause of diarrhea and other fall disorders. An ample supply of old grain should be carried over each year to get the turkeys well started on the finishing feeds, so that the change from old grain to new may be made gradually. When turkeys are going on to stubble fields, feed liberally in the morning near the roosting ground and the change will be more gradual and much safer.

Feed While on Stubble: A very large flock of turkeys will glean a stubble field much quicker than ordinarily anticipated. It is a good plan to supplement the stubble feed with threshed or shelled grain. Encourage the turkeys to range by feeding far out on the field. Continue to increase the feed until they are on full feed at least one month before the first market period. The market periods in Idaho are two to three weeks before the holidays, Thanks-

giving and Christmas. There also is a January demand for a small volume of turkeys.

Yellow corn is the best feed. Very fine turkeys, however, are grown and finished in Idaho by feeding barley and sour skim milk. The barley is steam rolled and fed in long troughs. The plan for a good feeding trough is illustrated in Fig. 4. The sour milk is fed in troughs of the same type as those used for feeding barley. Sour skim milk is beneficial in any combination of grain ration. A location out on the field away from the farm buildings is best for a feeding ground. Do not feed continuously on the same spot. Shift frequently to avoid filth and contamination. Turkeys do not feed well on muddy ground or when feed troughs become filthy. The danger from disease also is great. Frequent feeding is much better than one feed for the day. Hopper feeding may be practiced satisfactorily but frequent feeding is safer and will produce a more rapid and better finish.

Very often, turkeys do not feed well during early fall. The finish, therefore, is slow. Sameness of feed is usually the cause.

Ground grains, containing 5 per cent bone meal and 5 per cent tankage or meat or fish meal, will improve the appetite and hasten finish. Feed cod liver oil also, the formula being the same as for breeding stock.

KILLING AND DRESSING

Kill Finished Stock: Select carefully and kill only finished stock for each market period. Do not guess but examine each bird. Birds that are not finished should be fed for the next pool or market date. Poor finish affects an injury in two ways: (1) The value of the stock is less; (2) The reputation of the community is injured. A longer feeding period will increase the value of the stock many times more than the cost and in addition will improve the reputation of the community.

The finish may be determined by the plumage, color of skin and plumpness of the body. Any turkey that has any amount of pin feathers is not fat, is difficult to dress and may be graded down. When the wings become quite yellow on the underside and the birds show liberal yellow on the back, they are ready to kill, provided they are in full feather. Examine the breast and thighs. If they are well covered with firm flesh, the birds are ready for market.

Starve Before Killing: The crop, gizzard and intestines must be completely emptied before killing. The quality

and flavor of the carcass is impaired if there is any feed in the bird when killed. Feed lightly the evening before killing and give no feed the morning when killed. A full drink of water in the morning may cause the feathers to loosen and will flush the intestinal tract.

Catching: Confine the stock to a small corral or enclosure. A large shed is ideal. Build a catching crate four feet wide, ten feet long and four feet high. Use wire netting for the side and cover the top with lumber. Build the crate high enough off the ground so that the birds may be caught without stooping. Build an inclined chute leading from the enclosure to the catching crate. Cover the chute so that the turkeys cannot fly out. The chute should be high enough to accommodate a man when walking. Build a door in the side of the crate from which to catch the turkeys. The object in building the crate low is to prevent the turkeys from flying when caught. Many bruises are made on carcasses when catching to kill. Cover the floor of the crate with straw. Catch the birds firmly by both legs. Draw the legs from under them, allowing the birds to fall gently on their breast. Drag them from the crate feet first. A hook is necessary when catching in a large space. The plan for a home-made hook is shown in Fig. 8. Get the hook over both legs when possible before. attempting to down the bird.

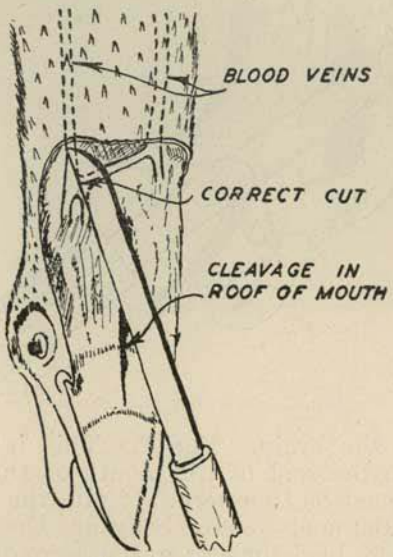


Fig. 1. Sticking.

Hanging: Fasten a strong cord or small rope to a rafter or some strong support. Tie a wooden lug to the end of the cord or small rope as shown in Fig. 11. The turkey is suspended by throwing the cord or rope around the legs, just above the feet. The lug binds between the legs and the rope. This plan is rapid and secure. Wire hooks are used also. The wire is bent to provide a hook for each leg. The hook is supported and suspended in the same manner as the lug. Use number 4 wire.

Sticking: Take the head of the bird in one hand. With a sharp, long and thin but strong-bladed knife, cut the arteries in the throat as shown in Fig. 1. After the veins are cut, pause for about 10 seconds and then thrust

Fig. 2. Piercing the Brain.

the blade into the brain. Fig. 2. This is done through the cleavage in the roof of the mouth or through the eye. The bleeding must be thorough. If not, the blood will clot in the neck. Red spots on the body are the result of poor bleeding. Poorly bled turkeys grade second to culls. The puncture of the brain is for the paralytic effect, which

causes the feathers to loosen. The sticking must be thorough. Thrust the blade deep into the brain. When the sticking is thorough, the bird will indicate it by the quiver of the body.

Weighting Beak: A dry cell frequently is used to weight the beak. A small pail, however, such as a five-pound lard pail, is best. The pail will catch the blood and prevent splashing and soiling the carcass. Equip the weight with a hook to insert into the beak, as shown in Fig. 12. Place a small stone in the pail for weight.

Dressing: As soon as the bird is stuck and the weight is hung, start picking. Pluck the stiff tail feathers first and the flight feathers from the wings next. Immediately start plucking the feathers from the legs and continue picking down toward the head of the carcass.

Pluck the feathers upward, do not jerk down, except on the back, where downward plucking may be done with safety. Pluck rapidly, removing small bits of plumage with each movement. The temptation to speed by removing large quantities of feathers at each movement must be overcome. The danger in speed is torn places in the skin. A good practice is for one picker to rough and another to finish. Roughing is plucking the coarse feathers. Finishing is the plucking of the down and any pin feathers that may be on the carcass. Leave no feathers on the legs, neck or wings except a few stiff ones on the last joint of the wings. Feathers must be removed from the head. If there are any rents in the skin, squeeze together and sew with clean, white thread while the carcass is yet warm.

Good Dressing Pays: Remove all feathers from the legs, head and wings, except the few short stiff feathers at the tip of the wings beyond the last joint. However, all of the small downy feathers should be removed from around the stiff feathers. Pin very thoroughly. A very few pin feathers on the breast or thighs may cause a bird to be placed down one or two grades, that would otherwise have gone as a prime. Wash the feet. Remove all blood from the head and wipe the beak with a damp cloth. Any blood or soiled spots on the carcass should be removed. Blood that has become dry may be removed by brushing a few times with a dry sponge. A little effort in pinning and cleaning the birds may mean from two to eight cents a pound difference in market value.

Conveniences: Rapidity in each operation in killing and dressing is essential to insure a clean and satisfactory job. Provide each picker with a table or bench upon which

to lay his knife and weight. Locate the catching crates as near the pickers as possible. Remove the birds to other hooks or hang supports to pin and finish. Hanging is safest to prevent bruising the carcass when finishing. If the birds are laid on a table to finish, cover the table with a thick, clean cloth to prevent soiling or bruising and roughing the skin.

Cooling: Prepare racks upon which to hang the dressed carcasses to cool. Make the racks substantial. Place the racks under cover properly enclosed so that the carcasses will not be damaged by weather or animals. Plenty of opening for air movement should be provided so that the cooling will be thorough. Hang the birds by the legs. Hang them so that they will not touch the wall, posts or each other. The cooling must be thorough, yet there must be no freezing. Wrap the heads before loading. If the heads are wrapped there is less likelihood of blood stains on the carcasses when they are being hauled to market. The carcasses must be thoroughly cooled before boxing. Graders test all doubtful carcasses with a thermometer for temperature. Thirty-six degrees Fahrenheit, internal temperature, is the danger line. No birds should be packed that are warmer, and 34 degrees is much safer.

Hauling to Market: Line the conveyance with clean material to prevent soiling and bruising of carcasses. Pile the load tightly to prevent jostling. Cover the load with a clean canvas.

TURKEY DISEASES AND SANITATION

Turkey diseases in general are not well understood. In many instances outbreaks of diseases are attributed to some fault of management when in reality coccidiosis or blackhead is causing the mortality.

The greater number of turkey diseases are caused by infectious organisms which of course cannot develop spontaneously. In other words, these disease producing organisms must in some way be introduced into the turkey flock in order that the birds may become infected. Turkey diseases in general are the same as those affecting chickens. However, turkeys seem to be more susceptible to many of these diseases than are chickens. Some of the more common diseases of turkeys such as tuberculosis, blackhead, and intestinal parasites may be prevented.

HOW TURKEY DISEASES ARE INTRODUCED

The beginner in turkey production may experience very satisfactory success providing he does not attempt to grow turkeys in association with chickens. This is due to

the fact that he is usually starting where turkeys have not previously been raised and therefore where the buildings and grounds have not become seeded with the organisms responsible for turkey diseases.

MATURE TURKEYS CARRY INFECTIONS

One common method of disease introduction is through the purchase of mature, or semi-mature breeding stock. This is understandable when we realize that practically all mature turkeys harbor some form of parasite or infectious disease. Mature birds should therefore not be purchased except from flocks known to be free from diseases and preferably from a flock in the immediate neighborhood.

The most satisfactory method of obtaining breeding stock is through the purchase of hatching eggs or day old poults. One can be assured that these eggs or turkeys will not harbor the disease infections that so many times are found in mature birds.

Chickens Carry Turkey Diseases: The outstanding cause of disease introduction on diversified farms is through contact with chickens on the same farm. Turkeys are highly susceptible to some chicken diseases. Such is the case especially with blackhead. The production of turkeys in contact with chickens on the same farm practically always results in heavy mortality in the turkeys and consequently in financial loss.

The recommendation is therefore made that all turkeys grown on any type of farm be produced on land and in buildings that have not been used for chickens for at least two years; and that all such turkeys be strictly segregated from chickens on the same farm.

Other Methods of Introduction: Other factors which may serve as the means of introducing infectious diseases into the turkey flock are the use of returnable shipping crates, contact with neighboring poultrymen or visitors, the use of second hand equipment and the introduction of disease organisms on grain bags or feed material. These sources of introduction can be guarded against and prevented.

The necessity for guarding against the introduction of these diseases is of primary importance. One should couple this program with one of sanitation to prevent the spread and propagation of turkey diseases if they are by chance introduced in spite of the precautions taken.

Quarantine and Disposal of Diseased Birds. Young poults should be grown out of contact with chickens or poultry droppings. All birds that show evidence of disease

conditions should be isolated. All badly diseased birds should be killed and autopsied in order to detect disease conditions. Birds that are killed or die should be burned.

Early Brooding Diseases: Diseases of young turkeys during early brooding are very similar to those affecting young chickens. Pneumonia caused by chilling or overheating is quite common. The eating of litter causes impactions with fine chaff or other foreign material and may be the cause of heavy mortality if the birds are placed in the brooder before they are ready to be fed. As is suggested in the management phase of this bulletin, turkeys should be given a drink, oyster shell, and green feed immediately after they are placed in the brooder. The availability of nutritious material will prevent the young poults from eating litter.

RICKETS

Occasionally early hatched and more often late hatched poults develop crooked legs during the first few weeks of life. This condition seems to develop in some poults regardless of the type of feed available. In most instances, however, it is due to a deficiency in minerals supplied to the turkeys or a deficiency in Vitamin "D", the anti-rachitic vitamin that is very abundantly supplied in cod liver oil and green feed. This anti-rachitic factor also may be supplied by exposure to the direct rays of the sun.

COCCIDIOSIS

When coccidiosis occurs in young poults it usually appears before they are placed on the open range. It is caused by a single cell animal organism, microscopic in size, that multiplies very rapidly once it gains entrance into the alimentary tract of young turkeys. The source of contamination is largely through the droppings. It develops in turkeys in exactly the same manner as it does in chickens.

When turkeys become affected with coccidiosis they become droopy, the wings are dropped, and they have a tendency to huddle under the brooder stove or near the hen to gain additional heat. In acute outbreaks of this disease the droppings may contain considerable blood due to the activity of the organisms in the mucous membrane of the digestive tract.

If a bird suffering from coccidiosis is autopsied the ceca or blind intestines will be found to be the seat of trouble. These blind guts may contain clotted blood or a semi-solid cheesy material. In the latter stages of the disease this material develops into a plug which can be removed as one piece.

Coccidiosis May Be Confused with Blackhead: This condition of the ceca or blind guts may be confused with a similar condition that develops in blackhead. In coccidiosis the cheesy plug is usually not directly attached to the mucous membrane, whereas in blackhead this cheesy material is closely adherent to the lining of the intestine. In blackhead one will more often also find lesions in the liver, which is not the case in coccidiosis.

Turkeys may die within 24 hours after showing initial symptoms. They may recover completely if the infestation was not heavy or develop as runts if the affection was severe.

Coccidiosis Self Limiting: Coccidiosis is known as a self-limiting disease. This term means that the organisms responsible for the disease pass through a definite cycle ranging from 7 to 14 days during which time they pass through all of the stages of their life and are expelled in the droppings. It is, therefore, necessary that the poults become continually reinfected with this organism in order that they continue to be affected by the disease. Preventive or curative measures can be directed against the organism responsible for the disease by eliminating the droppings from the immediate vicinity of affected poults.

If the disease breaks out after the birds are on the range they should be confined to a house which preferably has a wire yard, and the house should be cleaned at daily or two-day intervals to prevent the young poults from reinfesting themselves through picking up the droppings.

Use Milk Treatment: The poults should be treated for a 7-day period with a mash mixture composed of 25 parts powdered skim milk or powdered buttermilk mixed with 75 parts of their regular mash feed, and they should receive during this time nothing but this mash mixture, green feed and water. This disease is more often found where the poults are allowed access to old runs, where they are congested in a small area which is not kept scrupulously clean and where the house is allowed to become extremely damp and dirty. By following the suggestions outlined under management and brooding of young turkeys in this bulletin, much of the danger of an outbreak of this disease will be removed.

BLACKHEAD OR ENTEROHEPATITIS

This is the most serious disease affecting turkeys since it is so common and severe. In the past when blackhead gained a foothold in the turkey producing areas, turkey pro-

duction gradually ceased. Recently, however, many new facts concerning this disease have been brought to light and it is now possible to combat it provided we are willing to take advantage of this new knowledge.

Blackhead more often attacks turkeys before they are three months of age, but it may affect birds of any age. The organism responsible for this disease is a single celled animal organism similar to the one responsible for coccidiosis. The infection is spread through water and feed contaminated with the droppings from turkeys or poultry.

Blackhead in Chickens: Chickens are susceptible to blackhead and in recent years this disease has been found to produce considerable mortality in young chicks. Mature chickens are seldom seriously affected although they may be constantly infected and consequently be capable of transmitting the disease to turkeys. It is practically impossible to grow turkeys satisfactorily where they are in contact with chickens.

The Cecal Worm and Blackhead: The small cecal worm found in the ceca or blind gut of both chickens and turkeys plays an important role in the transmission of blackhead. It is definitely known that this parasite is directly linked up with the production of blackhead in turkeys, and without this parasite it is practically impossible for this disease to live over in the soil from year to year. It has been proven that the blackhead organism alone will not live outside the body of the bird for more than one day. Young poults that become infected may, however, transmit the disease directly to other poults through the feed and water contaminated with their fresh feces.

It is known that blackhead can be carried over on land that has been used as chicken or turkey range year after year. It has been found that the cecal worm egg is the source of this infection. Cecal worm eggs whose outer covering had been disinfected, when fed to poults, that had been reared in batteries out of contact with any source of infection produced typical lesions of the disease. Therefore, a program that will prevent the development of cecal worms in turkeys will also prevent them from developing blackhead.

Symptoms and Lesions: Turkeys infected with blackhead become weak and droopy, their wings are dropped, their appetite is reduced and they usually lag behind the remainder of the flock. In the latter stages of the disease they develop a profuse yellowish diarrhea. It is difficult, if not impossible, to say definitely that a bird has black-

head by observing the symptoms. Symptoms in general are not so very different from those seen in coccidiosis. It is necessary to autopsy one or more of the affected birds in order to definitely diagnose the disease.

Two important points should be observed in the abdominal cavity of turks in diagnosing blackhead. First, the ceca, or blind guts, are affected, and they usually show a necrotic cheesy material that is more or less closely adherent to the mucous lining. Second, the liver will usually be affected, also, showing irregular patches of variable size with a necrotic sunken center bordered by a greenish-yellow area. This liver lesion is typical of blackhead only, and is a definite means of identifying the disease.

TREATMENT

No method of treatment or prevention involving the use of drugs has proved of benefit. The only means of combatting this disease is through sanitary measures. These measures must be obtained to prevent the young turkeys from coming in contact with the droppings of mature turkeys or chickens either of which may harbor the cecal worm eggs and blackhead infection. The sanitary measures outlined to control turkey diseases should be followed.

Turkeys that once develop blackhead should be isolated in a clean house. Badly affected birds should be removed, killed and burned. The entire group of poults from which affected birds are taken should receive the milk treatment as outlined for coccidiosis. They should then be placed on clean range and every precaution possible taken to prevent the spread of the disease in the flock. It should be remembered that blackhead is the most serious disease confronting turkey growers and that it must be kept in control if turkey production is to be profitable.

ROUP

Roup or coryza of turkeys is a condition affecting the respiratory tract and associated passages of the head. This disease may be divided into three types, nutritional roup, infectious roup, and contagious roup.

Contagious roup is the type most dreaded. Nutritional roup develops where the feed is deficient in Vitamin "A". This vitamin may be supplied in green feed, yellow corn, alfalfa leaves and blossoms and in cod liver oil. Alfalfa leaves may be fed in the form of hay. Where the other materials are not available 2 per cent of cod liver oil should be added to the ration. Contagious roup may develop from nutritional roup or from simple colds due to the

fact that the organisms responsible for this disturbance have an excellent opportunity to become established where the mucous membranes are already irritated.

Roup in turkeys more often develops in late hatched, poorly developed poults and in those that are allowed to range with chickens. Treatment for this condition is largely one of correcting the management faults responsible for the disturbances. Badly affected birds should be isolated. The cheesy substance that has accumulated in the eye and in the sinus in front of the eye should be removed even if it necessitates lancing the sinus. The irritated membrane should be bathed with a 15 per cent solution of argyrol. A laxative in the form of epsom salts should be given to the birds at the rate of one pound to each 500 pounds of turkeys in sufficient drinking water for one day.

Care should be taken to thoroughly disinfect the quarters in which the poults are kept. Some antiseptic should be used in the drinking water.

TUBERCULOSIS

Tuberculosis of turkeys is not as general as tuberculosis of chickens. However, it is prevalent in turkeys where the disease is present in chickens on the same farm. The presence of tuberculosis in turkeys can be detected by autopsy of an affected bird, in which instance yellowish firm nodules are usually found in the liver or spleen and along the intestinal tract. These nodules are differentiated from the lesions of blackhead by the fact that they are circumscribed and are usually raised above the level of the liver tissue.

The only method of controlling this disease is through the elimination of the affected birds and the growing of young stock out of contact with any infected birds and on land that is clean. By this method a clean flock can be reared the first season.

FOWL POX

Fowl pox or chicken pox is extremely prevalent in poultry in some sections of Idaho. In these sections turkeys are infected to some extent.

The lesions are present in the form of wart-like elevations on the unfeathered portion of the head and as cankerous growths in the mouth and throat. The wart-like elevations are at first yellow and shiny and later develop into darkened scabs that eventually drop off. Mortality in turkeys due to this disease is usually low and the disease causes little damage except when it appears during the laying

season. At such times it causes considerable mortality and a decided drop in egg production.

Very little can be done in treatment of the disease. The isolation of affected birds and the maintenance of strict sanitation are advised.

Where fowl pox occurs yearly in a turkey flock, it would be advisable to vaccinate all young stock before cold fall weather sets in. Information concerning the vaccination procedure as well as further information concerning fowl pox may be obtained in the University of Idaho Bulletin No. 168 on "The Control of Fowl Pox in Poultry".

ROUND WORMS AND TAPE WORMS

Round worms of turkeys are similar to those of chickens, two forms being most prevalent. The large round worm of the small intestine is the same as that found in chickens and is commonly found where turkeys are grown in contact with chickens or on the same piece of land year after year. The small cecal worm found in the blind intestine is the most common worm of turkeys and is the one associated with the blackhead organism.

These worms are carried over from year to year in infected stock and in the soil where droppings have accumulated in the form of embryonated or infectious eggs. These eggs are very resistant to changes of climatic conditions and to practically all disinfectants. It has been found, however, that a solution of pure iodine in water is very toxic to the eggs and worms. The use of this type of material, found on the market as iodine suspensoid, is the only satisfactory means of killing these eggs as they occur in the houses and equipment used in brooding poults.

By following the brooding and sanitary methods already suggested additional assurance of freedom from intestinal parasites may be obtained. The large round worms may be eliminated from the intestinal tract of turkeys by the use of nicotine sulphate which should be given in capsules to each individual bird. Nicotine sulphate capsules may be obtained from your local veterinarian or druggist. Two mature chicken size capsules are required for a mature turkey. Iodine in the form of Iodine Vermicide that is introduced into the gizzard by means of a catheter or tube and bulb syringe, supplied with the medicine, is very satisfactory in removing both round and tape worms. This treatment is highly recommended where the birds are in poor condition due to the fact that it does not irritate the digestive tract or weaken the birds.

TAPE WORMS

Tape worms of turkeys are prevalent, likewise, where turkeys are grown in contact with chickens or where they are forced to use the same range year after year. The same preventive measures should be taken as for round worms. In addition special precautions should be followed to prevent flies from traveling from older turkeys or chickens to young poults. These flies as well as beetles and garden slugs may be carriers since they are intermediate hosts of such worms.

The only certain means of determining whether turkeys have round or tape worms is by autopsying an affected bird. This is done by slitting the intestine from end to end while in a shallow pan of water and noting the presence or absence of worms in the intestinal tube. Tape worms may be removed from the intestinal tract of turkeys by the use of Kamala, the dose being two grams for mature turkeys, one and one-half grams for young hens and toms, and one gram for birds weighing from 8 to 12 pounds. Smaller birds, and those in an unthrifty condition, should not be treated without special directions. Kamala tablets or capsules in one gram doses may be obtained from your local veterinarian or druggist. Birds suffering from both round and tape worms may receive double treatment if they are in good flesh. Iodine as recommended for round worms is very satisfactory for the removal of tapeworms, also.

LICE

Lice are very destructive to young turkeys that are being naturally brooded. It is, therefore, important to be sure that the turkey hen is free from lice before the turkeys hatch. This can be accomplished by dusting her thoroughly with sodium fluoride, using about 12 pinches on different areas of the body, being sure that the dust is placed on the skin rather than on the feathers, or by the use of Blue ointment (mercurial ointment). Blue ointment, made by mixing 30 per cent mercurial ointment with twice as much crisco or other cotton seed oil product, is applied to maturing birds in pellets about the size of a pea. One pellet is smeared on the skin below the vent and one on the back of the head. Young poults should receive only one pellet the size of a kernel of wheat on the back of the head. Young poults may be treated for lice with powdered sodium fluoride using but one pinch applied on the back. Nicotine sulphate in the form of "Black Leaf 40" applied with an oil can to the roost late in the evening will destroy lice on turkeys that are roosting.

MITES

The ordinary red mite of chickens may be a serious problem with turkeys, but under ordinary circumstances this is not the case because of the fact that turkeys usually roost out in the open. These mites may be eliminated by the use of pure carbolineum painted on the elevated roosts which are usually supplied for turkeys. The use of ordinary crankcase oil for this purpose is also effective for a short time.

FOWL CHOLERA AND TYPHOID

Fowl cholera and typhoid are infectious diseases of both chickens and turkeys. These conditions are not prevalent in Idaho. However, if serious losses are experienced in mature turkeys, one should get in touch with the local veterinarian, poultry extension specialist, or the poultry department of the University to determine whether or not either of these diseases may be present in the flock.

The only practical method of determining whether or not they are present is through bacteriological cultures of the organs or blood of the affected birds in the laboratory.

The quarantine of all diseased turkeys and the use of sanitary precautions in preventing the spread of infection from diseased to healthy birds or from flock to flock will prevent many losses due to such acute infectious diseases.

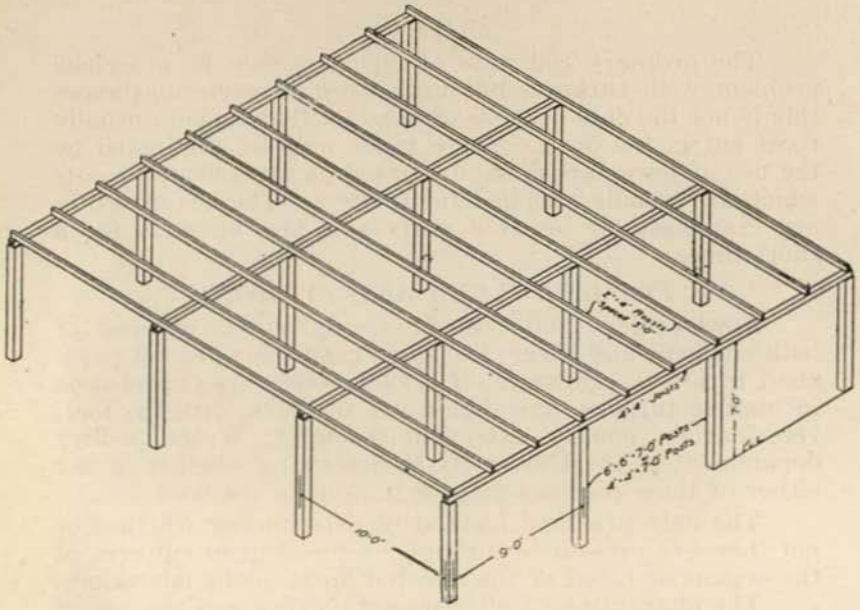


Fig. 3. Turkey Roost.

CONSTRUCTION OF EQUIPMENT

Outdoor Perches

Fig. 3 shows the outdoor perches for turkeys. If these roosts are to remain permanently in one place the 6x6 posts should be 9 feet long and set 2 feet in the ground. Otherwise, the posts may be set on the surface of the ground and must then be braced each way with diagonal strips of 1x4. The posts are set 10 feet apart one way and 9 feet apart the other way. They should either be set so that the tops will line up or else they should be sawed off evenly in order that the perches may all be level. 4x4 joists are laid across the tops of the posts the short way. 2x4 roosts are then set across the joists in the opposite direction at 3 feet intervals. The roosts shown will accommodate 200 turkeys and will require the following materials.

MATERIAL AS BOUGHT			MATERIAL AS USED		
No. of Pieces	Length	Size of Stock	No. of Pieces	Length	Use made of piece
8	18′	6x6	16	9′	Upright posts (16 posts are set in the ground)
8	14′	6x6	16	7′	Upright posts. (16 posts are not set in the ground)
6	18′	4x4	12	9′	Joists
30	10′	2x4	30	10′	Roosts.

Summary

No. of Pieces	Length	Size of Stock	Material	Board Ft.
8	18′	6x6	No. 1 Common Fir	432
or 8	14′	6x6	No. 1 Common Fir	336
6	18′	4x4	No. 1 Common Fir	144
30	10′	2x4	No. 1 Common Fir	200
			Total, if posts are set in ground, bd. ft.	776
			Total, if posts are not set in ground, bd. ft.	680

8 lbs. 16d Nails.

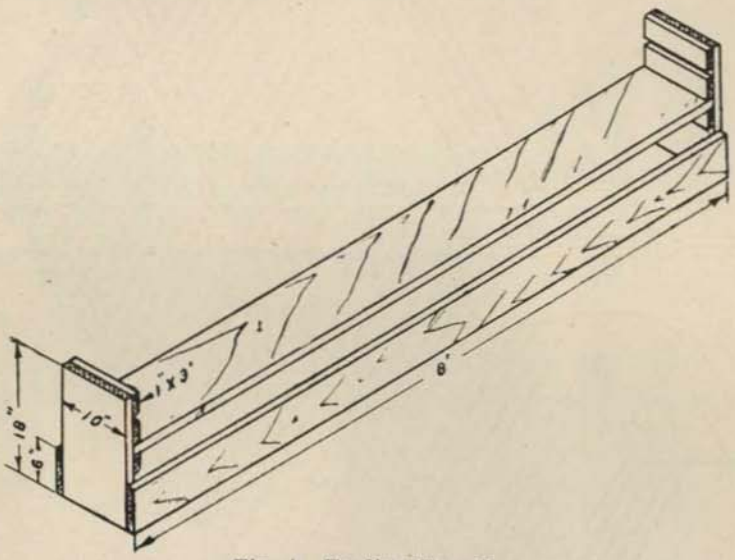


Fig. 4. Feeding Trough.

FEEDING TROUGH

A satisfactory feeding trough is shown in Fig. 4 This trough requires for its construction 16 ft. of 1x6, 19 ft. of 1x10, and 5 ft. of 1x3 clear grained lumber. The 1x3 cleats nailed on the ends of the trough above the top of the trough sides are for the purpose of holding the trough cover at various heights required during the growth of the birds. During early feeding the trough may rest directly on the ground. However, as the height of the birds increases, the trough should be raised to a convenient height by placing short blocks under both ends.

SETTING PENS

Figs. 5 and 6 show the construction of the pens for the turkey hen when setting. The pens are made in two

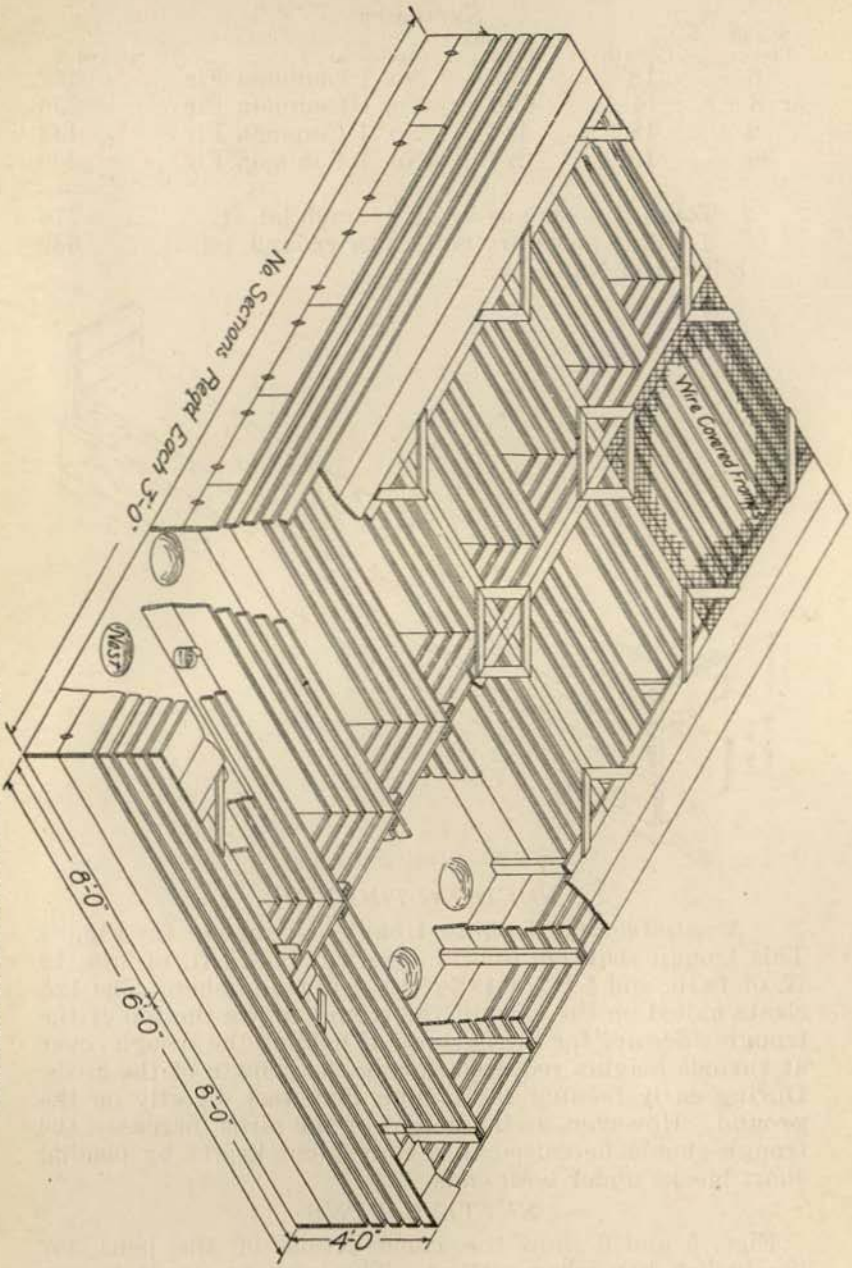


Fig. 5. Isometric View of Nesting Pens

rows, each pen 3 feet wide and 8 feet long. The number of sections may be increased to suit requirements. To construct the pens, begin by nailing a 1x12 board along the bottom of the 2x4 uprights, 4 feet long in each corner of each pen. On the interior partitions and on the sides of the pens another 1x12 is fastened solidly to the 2x4s. At the end of each pen a 1x12, 3 feet long, is hinged to the bottom board in such a manner that it may be opened out when the turkey hens are put into or removed from the pen. From the upper edge of the two 1x12s which will be 2 feet above the surface of the ground, the partitions and outside walls are built up with 4 strips of 1x4 spaced 2 inches apart, making the total height 4 feet.

A space 2 feet wide over the outer ends of the pens is roofed over solidly with one-inch lumber. The remaining space on the top of the pens is covered by 6x6 feet frames made up of 1x4 material covered with the inch mesh poultry netting. A small hole for the nest is scooped in the ground at the end of each pen under the solid portion of the roof. The section of pens shown in the figures will accommodate 16 turkey hens and will require the following materials:

MATERIAL AS BOUGHT			MATERIAL AS USED		
No. of Pieces	Length	Size of Stock	No. of Pieces	Length	Use made of piece
9	16′	2x4	34	4′	Uprights
30	16′	1x12	26	16′	Sides and roof
			8	8′	Sides and roof
4	12′	1x12	16	3′	Doors
52	16′	1x4	44	16′	Partitions
			8	8′	Sides and Ends
			32	2′	Corner Braces
24	12′	1x4	32	3′	Inside Partition
			32	6′	Screen Frames

Summary

No. of Pieces	Length	Size of Stock	Material	Board Ft.
9	16′	2x4	No. 1 Common Fir	96
30	16′	1x12	No. 1 Common Fir	480
4	12′	1x12	No. 1 Common Fir	48
52	16′	1x4	No. 1 Common Fir	278
24	12′	1x4	No. 1 Common Fir	96
			Total	998

Miscellaneous

16 pair 5″ strap hinges .
48′-1″ mesh poultry netting, 6′ wide.
20 lbs. 8d nails.

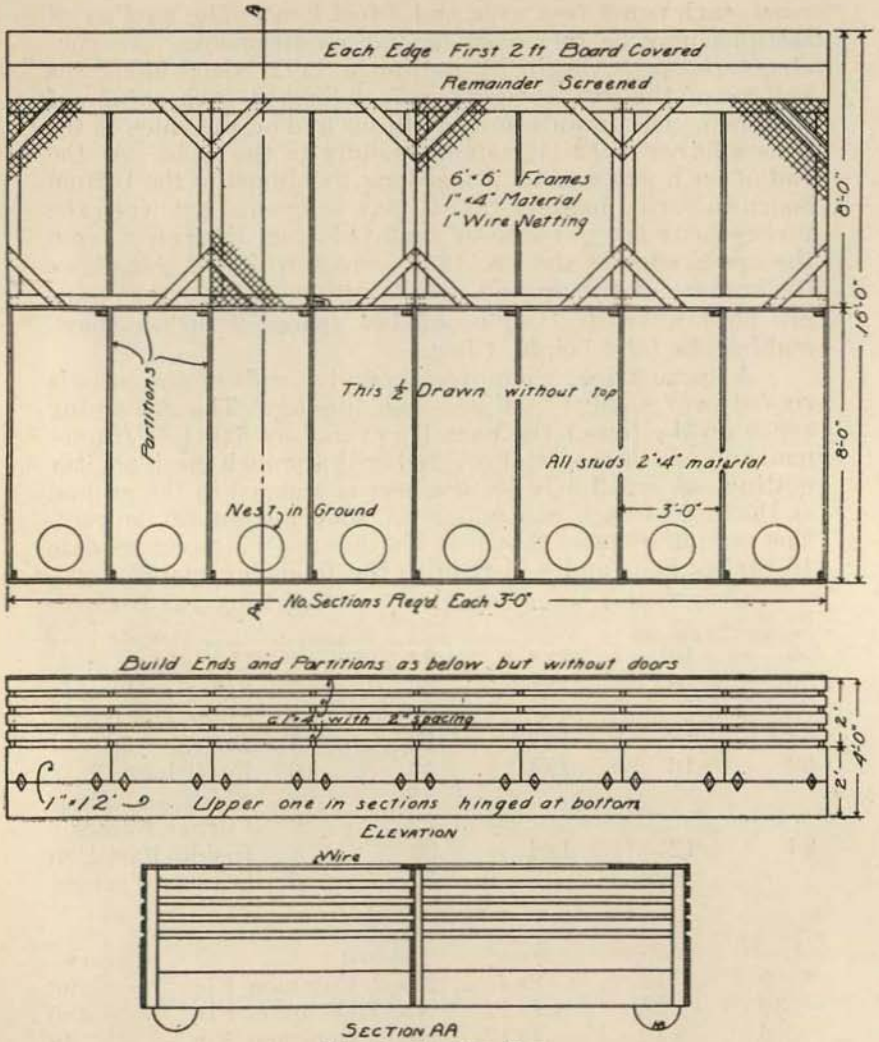


Fig. 6. Nesting Pens

An empty tin can should be fastened to the inside of each pen near the nest. This can will serve as a watering cup for the hen.

Brooder Coop

The brooder coop shown in Fig. 7 is built in a gable shape 4 feet square on the bottom and 4 feet high at the peak. The bottom is framed with 2x4s with half-and-half

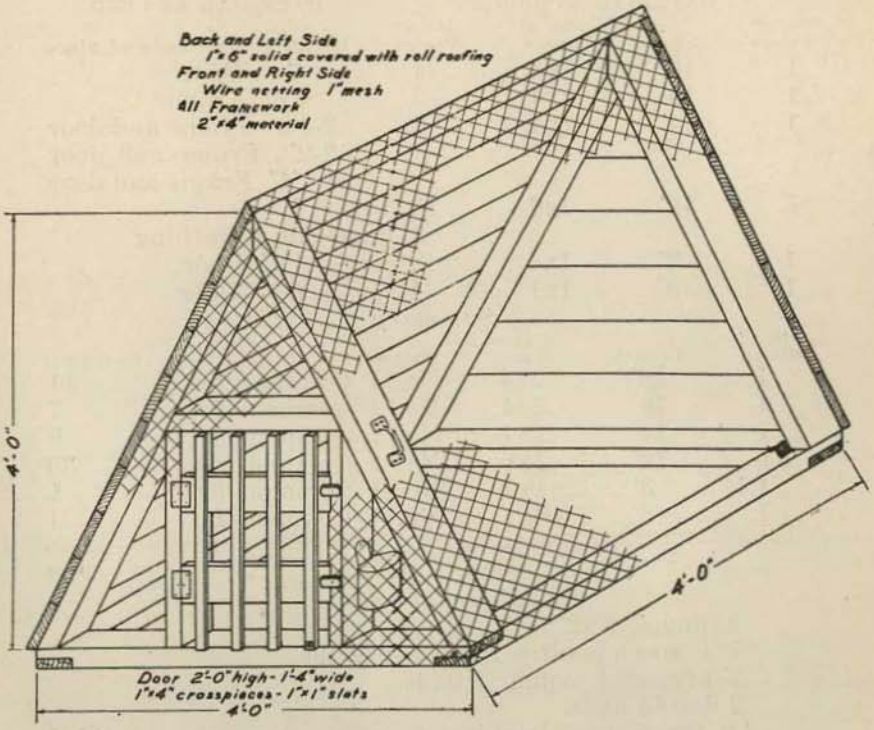


Fig. 7. Brooder Coop

joints at the corners. The upright frames of the coop are toe-nailed to this frame at each end. One side and the back of the coop are covered solidly with 1x6 lumber and rolled roofing so that there will be no wind and rain reaching the turkeys from these surfaces. The front and the other side are covered with poultry netting with one-inch mesh. A slat door is hung in a frame work at the front end. The door is 2 feet high and 1 foot 4 inches wide. It is made up of 2 pieces of 1x4 to which the hinges are attached and to which are nailed four 1x1 slats. The construction of this coop is shown very clearly in the figure. There will be required:

MATERIAL AS BOUGHT			MATERIAL AS USED	
No. of Pieces	Length	Size of Stock	No. of Pieces	Length Use made of piece
1	16′	2x4	4	4′ Base
1	10′	2x4	2	4′6″ Frame
1	14′	2x4	5	2-4′6″ Frame and door
				2-2′ Frame and door
				1-1′4″ Frame and door
5	12′	1x6	10	4′
			8	Bevel cut Sheathing
1	3′	1x4	2	1′4″ Door
1	8′	1x1	4	2′ Door

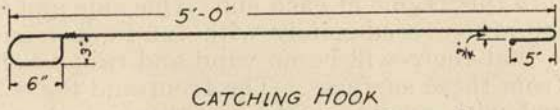
Summary

No. of Pieces	Length	Size of Stock	Material	Board Ft.
1	16′	2x4	No. 1 Common fir	11
1	10′	2x4	No. 1 Common fir	7
1	14′	2x4	No. 1 Common fir	9
5	12′	1x6	No. 1 Common fir	30
1	3′	1x4	No. 1 Common fir	1
1	8′	1x1	No. 1 Common fir	1
				59

Miscellaneous

2 hinges, 2″x2″.
7′-1″ mesh poultry netting 4′ wide
7′ prepared roofing 4′ wide
2 lbs. 8d nails.

An empty can drinking fountain should be provided in the coop. A couple of handles fastened to the front corners will be convenient for moving the coop.



CATCHING HOOK
Made from No 5 Steel Fencing Wire

Fig. 8.

Catching Hook

A satisfactory catching hook may be made of a piece of ¼-inch rod or No. 4 gage wire, 6 feet long. The rod should be bent as shown in Fig. 8. Care should be taken that no sharp corners or ends are left where they may break the skin of the birds.

Colony Brooder House

The 10′ x 14′ colony brooder house has been planned to furnish proper housing conditions when hover type brooders are used. The size of the house is such that it can be

easily moved to new ground. The building is of the studding wall platform type and may be made with permanent skids as shown in Fig. 9. The arrangement of the windows and the tight construction of the building makes it possible to control ventilation and temperature to meet the requirements of wide climatic variations. The bill of materials for this colony house follows.

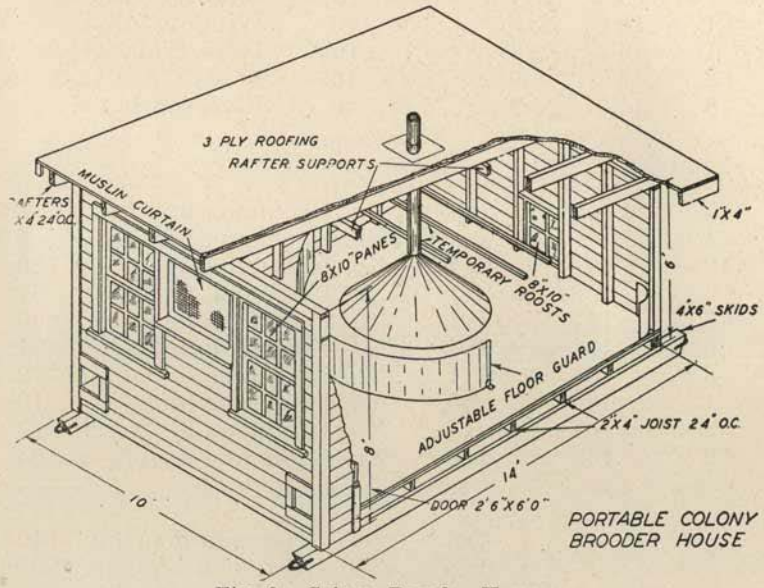


Fig. 9. Colony Brooder House.

COLONY HOUSE 10' x 14'

Bill of Materials

Detail of Framing Materials

MATERIAL AS BOUGHT				MATERIAL AS USED	
No of Pieces	Length	Size of Stock	No. of Pieces	Length	Use made of piece
6	18'	2x4	6	16'5"	Rafters
4	10'	2x4	4	10'	Plate
4	16'	2x4	8	7'2"	Studding—Front wall
4	12'	2x4	8	5'2"	Studding—Rear wall
1	12'	2x4	2	5'8"	Studding
1	12'	2x4	2	5'5"	Studding
1	14'	2x4	2	6'1"	Studding
		2x4	2	6'4"	Studding — Side wall
		2x4	2	6'8"	Studding
		2x4	2	6'11"	Studding
2	10'	2x4	2	10'	Rafter supports
10	10'	2x4	10	10'	Joist

Colony House 10'x14' (Continued)

MATERIAL AS BOUGHT			MATERIAL AS USED		
No. of Pieces	Length	Size of Stock	No. of Pieces	Length	Use made of piece
2	12'	2x4	4	6'	Roost supports
2	14'	2x4	2	14'	Sill
2	10'	2x4	2	10'	Sill
1	8'	2x4	1	8'	Window frames
1	10'	2x6	1	10'	Window sills
1	16'	2x4	1	16'	Door frames
2	16'	4x6	2	16'	Skids
5	10'	2x2	5	10'	Five roosts

Summary

No. of Pieces	Length	Size of Stock	Material	Board Ft.
5	10'	2x2	No. 1 common fir	1.7
1	8'	2x4	No. 1 common fir	5.3
18	10'	2x4	No. 1 common fir	120
8	12'	2x4	No. 1 common fir	64
6	14'	2x4	No. 1 common fir	56
5	16'	2x4	No. 1 common fir	54
6	18'	2x4	No. 1 common fir	72
1	10'	2x6	No. 1 common fir	10
2	10'	4x4	No. 1 common fir	27
2	16'	4x6	No. 1 common fir	64
				474.0
		1x4	No. 1 common flooring	140
		1x8	No. 1 common shiplap	950
		1x4	No. 1 common pine trim	60
				1150
			Total of Lumber	1624

Miscellaneous

8 ½" carriage bolts, 10" long
1 Rim lock door set
4 8"x10" 6-light barn sash
1 8"x10" 4-light barn sash
2 Rolls of 3-ply composition roofing
3 Pairs of 3" butt hinges
12 Thumb buttons for holding window in place
1 Pair door hinges
20 lbs. of 8d nails
10 lbs. of 10d nails

Permanent Furnace Type Brooder House

The permanent brooder house is a studding walled

frame structure on a concrete foundation. The detail of the construction includes the underheat furnace which should be carefully built according to the plans specified. In localities where drainage is difficult, it is advisable to raise the foundation at least 18 inches above the ground level and to fill under the floor with the best material available, preferably coarse gravel. The foundation footings should be extended below the frost line and the fill allowed to settle before placing the concrete floor. Care should be observed in installing the furnace in order that the fire hazard may be reduced to a minimum and in order to secure the best possible heating results. The brooder house illustrated in Fig. 10 is equipped with sanitary pens which are included in the bill of materials which follows:

PERMANENT FURNACE TYPE BROODER HOUSE 34' x 16'
PLAN SERIAL NO. P.H.4B.

Bill of Material

Detail of Framing Material

MATERIAL AS BOUGHT			MATERIAL AS USED		
No of Pieces	Length	Size of Stock	No. of Pieces	Length	Use made of piece
9	16′	2x4	18	7′6″	Studding—Front wall
9	10′	2x4	18	4′8″	Studding—Rear wall
3	16′	2x4	6	8′	Studding
9	12′	2x4	3	7′	Studding
			3	5′	Studding
			3	6′6″	Studding
			3	5′4″	Studding
			3	6′3″	Studding
			3	5′8″	Studding
					Side wall and partition
3	6′	2x4	3	6′	Joists
1	10′	2x4	4	2′6″	Window header
1	8′	2x4	2	4′	Door header
4	12′	2x4	4	12′	Plate—front
2	10′	2x4	2	10′	Plate—front
4	12′	2x4	4	12′	Plate—rear
2	10′	2x4	2	10′	Plate—rear
18	18′	2x6	18	18′	Rafters
4	12′	2x4	4	12′	Sills
2	10′	2x4	2	10′	Sills
3	16′	2x4	3	16′	Sills
4	8′	1x4	4	8′	Corner b'd—front
4	6′	1x4	4	5′	Corner b'd—rear
1	16′	2x6	4	4′	Window sills
1	10′	2x6	3	3′	Window sills
3	10′	1x4	6	4′6″	Window trim
1	8′	1x4	3	2′4″	Window trim

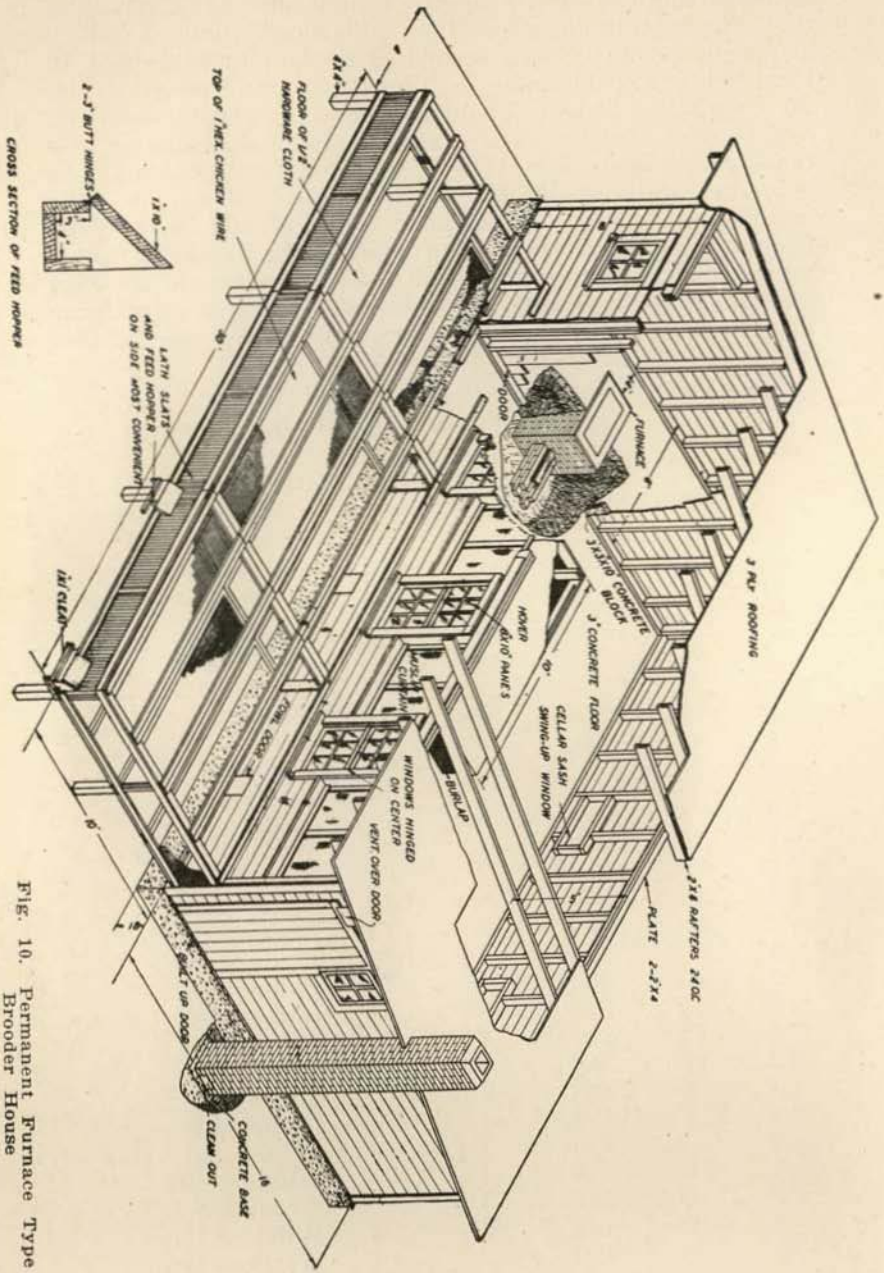


Fig. 10. Permanent Furnace Type Brooder House

Permanent Furnace Type Brooder House 34'x16' (Cont.)

MATERIAL AS BOUGHT				MATERIAL AS USED	
No. of Pieces	Length	Size of Stock	No. of Pieces	Length	Use made of piece
4	8'	1x3	8	4'	Curtain frames
4	10'	1x3	12	3'	Curtain frames
1	10'	4x4	6	10'	Coop Supports
40	10'	1x4	40	10'	Coop frames
3	12'	1x4	15	2'	Coop frames
2	12'	1x2	15	1'4"	Coop frames
24	10'	2x2	24	10'	Coop floor
6	10'	2x2	24	2'6"	Coop floor
3	10'	1x10	3	10'	Hopper top
6	10'	1x4	6	10'	Hopper sides
3	10'	1x4	3	10'	Hopper bottom
4	10'	1x6	4	10'	Hover sides
2	8'	1x6	4	4'	Hover ends
2	14'	2x4	20	15¼"	Hover frames
2	8'	¼x1	4	4'	Hover strips
4	10'	¼x1	4	10'	Hover strips

Summary

No. of Pieces	Length	Size of Stock	Material	Board Ft
4	18'	6x6	No. 1 common fir	216
6	12'	2x6	No. 1 common fir	72
3	10'	2x6	No. 1 common fir	30
18	16'	2x6	No. 1 common fir	288
1	16'	2x6	Clear white pine	16
3	14'	4x4	No. 1 common fir	56
2	14'	2x8	No. 1 common fir	38
14	16'	2x4	No. 1 common fir	149¼
13	12'	2x4	No. 1 common fir	108
11	10'	2x4	No. 1 common fir	73¼
3	6'	2x4	No. 1 common fir	36
4	10'	1x6	No. 1 common fir	20
2	8'	1x6	No. 1 common fir	8
5	8'	1x4	No. 1 common fir	14
2	10'	1x4	No. 1 common fir	8
3	10'	1x4	No. 1 common fir	10
4	8'	1x3	No. 1 common fir	8
3	12'	1x3	No. 1 common fir	10
2	8'	¼x1	No. 1 common fir	
4	10'	¼x1	No. 1 common fir	
				1130½

1x8	No 1 common shiplap	850
1x8	No 1 drop siding	1000
		1850
	Total of lumber	2980½

Miscellaneous

6 rolls prepared roofing
7 yards burlap, 36" wide
6 yards muslin, 36" wide
6 8"x10" 6-light window sash
2 10"x12" 4-light window sash
12 3" window hinges
52" 8" clay sewer pipe
275 brick
7 cubic feet concrete (1:2:4 mix)
40 pounds 8d nails
10 pounds 16d nails
16 ¾"x10" bolts with nuts and washers
9 cubic yards concrete (1:2:4), depending on height of foundation and depth of footing
2 bundles lath
40 pounds 8d common nails
8 pounds 10d common nails

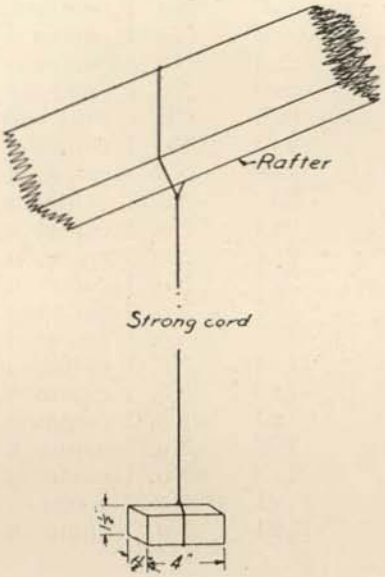


Fig. 11. Hanging Cord

Hanging Cord

Fig. 11 shows the arrangement of a wooden lug about 1½ inches square by 4 inches long, fastened to a piece of strong cord or small rope for hanging the turkeys to a rafter or other overhead support for dressing.

Fig. 12. Small Pail with Hook for Weight

Weight

A small hook made like the letter "S" may be used to hang a bucket from the turkey's head while bleeding. Fig. 12 illustrates such a hook and pail. The hook may be made of No. 8 wire.

Bronze Turkey Hen

Bronze Turkey Tom