Michigan Turkeys
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The cover shows a bird of desired meat type and good conformation.

MICHIGAN TURKEYS

J. M. MOORE AND A. M. BERRIDGE

Better turkeys can be grown in Michigan. Keen competition is taking away splendid markets that should be supplied from Michigan farms. Growers make preparations to sell birds on the Thanksgiving and Christmas markets but they neglect the opportunities for a cash income during other seasons of the year.

Turkeys have always been considered as difficult to rear but new ideas in management are reducing these production risks. Modern incubators and brooders produce strong, healthy poults. Confinement on limited range prevents losses by disease, theft, accident, animals and mixing with other flocks, losses which usually are connected with wandering, unprotected flocks. Blackhead, the scourge that came near to wiping out the turkey industry, and other transmittable diseases have been largely overcome through sanitation, clean range, clean brooders and shelters, and clean feeders and drinking dishes. Sanitation is the most important factor in successful turkey raising.

The demand for better turkeys is increasing. Between 18 and 20 millions of birds are marketed annually in the United States. Market preferences are strongly in favor of well finished carcasses, northern grown and freshly killed.

The Breeds

The turkey is essentially an American bird. There are six varieties that are recognized as standard by the American Poultry Association. This association publishes the "Standard of Perfection," a book giving a concise description of breeds and varieties of poultry. Anyone who is doing constructive breeding work with turkeys should obtain a copy in order to familiarize himself with the breed he is working with.

The varieties of domestic turkeys include the Bronze, Narragansett, Bourbon Red, White Holland, Black, and Slate. Their standard weights are given in the following table:

Table 1.

BREED	Adult cock (2 yrs. old or over)	Yearling cock (1 yr. old and less than 2 yrs.)	Cockerel (Less than 1 yr.)	Hen (1 yr. old or over)	Pullet (Less than 1 yr. old)
	Pounds	Pounds	Pounds	Pounds	Pounds
Bronze	36	33	25	20	16
Narragansett	33	30	23	18	14
Bourbon Red	33	30	23	18	14
White Holland	33	30	23	18	14
Black	33	30	23	18	14
Slate	33	30	23	18	14

CARE AND MANAGEMENT OF THE BREEDING FLOCK

Selection

As a general practice, the variety should be selected that is most popular in the neighborhood. The selection of the individuals in the breeding flock is of more importance than the selection of the variety. The ultimate goal of the breeder is an attractive meat carcass. Every bird in the breeding flock should be strong, healthy, and vigorous and should conform to the type which the consumer wants. The most desirable cuts of meat are found on the breast and thighs. Breeders should have broad, well rounded breasts and the legs should not be too long. A compact carcass is desired by the consumer. Quick maturity means added profit. The pullets to be retained as breeders should be selected each year before the birds are marketed. Early hatched pullets are best as they lay better than yearling hens and come into production earlier than the late hatched stock.

Fig. 1. Showing the growing flock being reared in semi-confinement.

Housing

The breeding flock should be placed in winter quarters about October first. The winter shelter for turkeys need not be an expensive building. It should be tight on three sides and open towards the south. A burlap covered frame, hinged at the top so that it can be lowered over this opening provides sufficient protection against driving rains and snow storms from the south. The building should provide 10 sq. ft. of floor space for each bird and should contain suitable roosting space.

Six inches of gravel covered with straw provides a suitable floor. Fresh straw should be added each week and all litter should be cleaned

out and drawn away at least once each month. Large feed hoppers with compartments for mash, grain, oyster shell, and grit should be provided. The feed hopper should stand at least 10 inches from the floor and have a reel to keep the turkeys from contaminating the feed. Medium size galvanized pails held in the corner of the pen by stakes driven into the ground are suitable for both water and milk. During cold weather insulation can be provided by placing the pail in a box packed with straw. Warm water should be given the birds in cold weather.

Shed type winter shelters have been used at the lake City Experiment Station for five years and are proving very satisfactory. These are 20 feet long, 15 feet wide, 8 feet high in front, and 5 feet high in back. Roof and three sides are covered with roll roofing. Material for each shelter costs approximately $25.00. Posts cut from the woodlot and

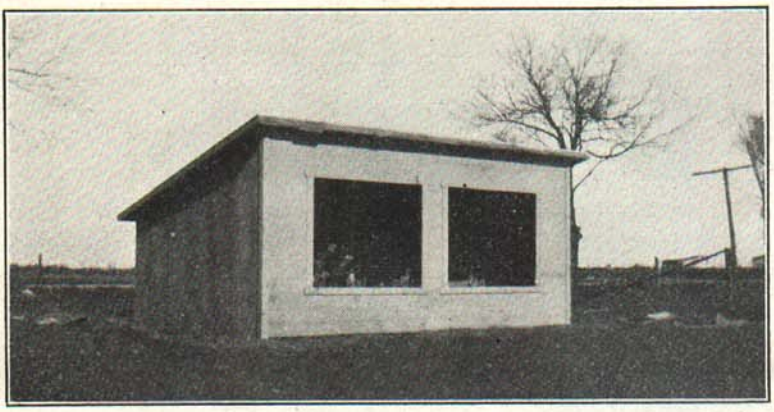

Fig. 2. One of the winter shelters in use at the Lake City Experiment Station.

rough lumber will reduce this cost. These houses are provided with electric lights for the production of early eggs.

Turkey hens will start laying when they get 12 to 13 hours of light, if the birds are properly fed and sheltered. At Lake City, the breeding flock started regular laying on March 24 in 1930, and 1931 without lights. With lights turned on at 5:00 A. M. beginning Jan. 1st, regular laying commenced Jan. 27th in 1932, Jan. 25th in 1933 and Jan. 24th in 1934. Two 50 watt bulbs guarded by wire protectors were placed in each shelter. Poults desired for early markets can be obtained at small extra expense in this manner. They should be incubator hatched. It has been observed that April hatched pullets will lay more eggs of equal size than those produced by yearling hens.

Male Birds

Strong vigorous toms should be retained each year to mate with the selected pullets. Provide one tom for each 10 to 12 hens. Allow them to run with the hens for a month or two before mating com-

mences. When mating starts only one tom should be with the hens at one time. The extra males may be shut by themselves in a box stall or yard where they cannot see the other birds. They should be fed the same feed as the hens. In a large flock with several toms, a regular rotation should be followed—never having more than one tom with the hens at one time. Do not use toms that are too large. (For desired weights of male birds see Table 1.) The toe nails should be burned back with a hot iron and the spurs taped to prevent injury to the hens during mating. Except in case of valuable show birds, do not keep the breeding toms past the yearling age.

A poultry hook provides a convenient method of catching any of the flock. The birds are not injured nor unduly scared when it is used.

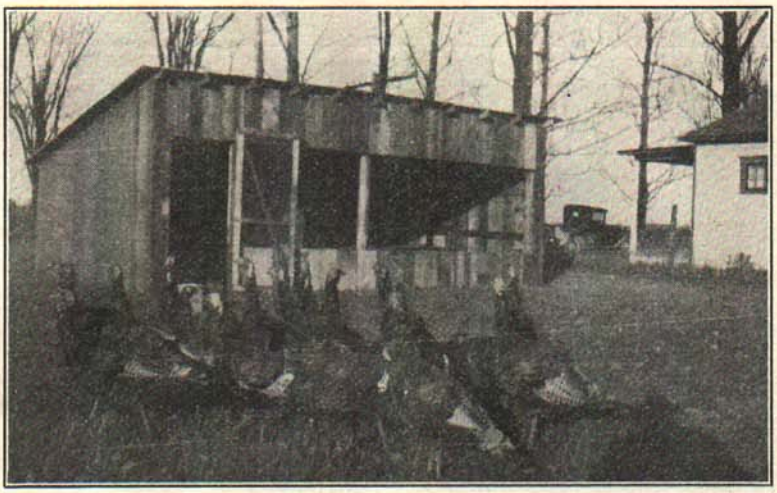

Fig. 3. The breeding flock on a good grass sod. An inexpensive winter shelter in the background.

The breeding stock should be sold as soon as the hatching season is over. Holding them until another year often means loss through sickness or accident and they will run with the young flock, tending to lead them from range, spread sickness and disease and generally add to the difficulties of turkey raising.

Feeding

When the selected pullets have been moved to their winter quarters care should be taken that they do not become too fat. For that reason, the growing mash should be discontinued and only grain fed in hoppers as a maintenance ration. A good maintenance ration is as follows:

100 pounds yellow corn or barley
100 pounds whole wheat
100 pounds oats

If the turkeys at this time are immature, liquid milk or semi-solid buttermilk can be given with water to drink until they have reached maturity. At that time, the milk may be left out of the diet until the laying mash is fed.

Each winter shelter should be connected with two permanent yards for the production of a green succulent crop. The size of the yards will depend on the number of turkeys in each house. For a flock of 20 to 30 turkeys, each yard should be 100 feet square or its equivalent. Fall wheat planted as early as possible will provide succulent feed in late fall and early spring. As soon as the ground can be cultivated in the spring, the other yard should be sown to either fall rye, wheat, or oats, and the flock turned in on this as soon as the crop is six inches high. This makes it possible to plant a similar crop in the yard where the flock has been ranging during the winter in case some of the breeding flock is kept for another season. The cultivation of the soil twice a year helps to keep it in a sanitary condition as well as providing succulent feed for the flock. Ordinary five or six foot wire fence is satisfactory to confine the birds when one wing is clipped.

The turkey breeding mash suggested by Michigan State College is as follows:

20 pounds ground yellow corn (coarse)
18 pounds finely ground oats
17 pounds bran
12 pounds flour middlings
14 pounds meat scrap
8 pounds dried milk
7 pounds alfalfa meal
2 pounds calcium carbonate
1 pound salt
1 pound cod liver oil

100 pounds

If liquid milk is available it should be fed.

Scratch Grain

100 pounds barley
100 pounds wheat
100 pounds oats

Grit, gravel, and oyster shell should always be kept before the birds. The alfalfa meal in the breeding mash may be obtained by grinding up second growth alfalfa hay.

There are three essentials in feeding to obtain eggs high in hatchability:

1. Milk. This may be supplied in the liquid form when it is available. The other two forms are condensed buttermilk and dried milk. Dried milk may be either dried skim milk or dried buttermilk.

2. Alfalfa. This provides the green feed and is a good substitute for succulent feed when the latter is not available. 7 per cent in the breeding mash should be sufficient.

3. Vitamin D. Vitamin D is found in direct sunlight when it does not pass through common window glass before reaching the birds. However, Michigan winters do not provide enough sunshine to supply this necessary part of the diet and the breeder must find a substitute. Cod liver oil or a similar food containing vitamin D should be fed to the breeding flock from December first throughout the breeding season. It can easily be mixed with scratch grain at the rate of one pint per 100 pounds. This is a good practice to follow, even when it is already in the breeder mash.

Oyster shell is necessary to the birds for the manufacture of egg shells. It should be kept before them at all times. Grit or gravel is also necessary for grinding the food.

Fig. 4. A suitable mash hopper for the breeding flock. There are four compartments; one for mash, one for grit, one for oyster shell and one for grain.

The breeding flock should be urged to lay as early as possible. Early eggs mean early poults and early poults mean well finished market turkeys. The breeding mash should be fed to the flock two months before eggs can be expected. May hatched poults, with proper management, can be finished for the late November trade. This would mean that the mash should be started by January 15. Provisions for nesting can be made in the corners of the yard. In the early part of the hatching season, many eggs will be laid in the deep litter of the winter shelter. Care should be taken to gather eggs often so that they do not become chilled or broken.

The birds in the breeding flock should be kept free from lice and mites. Lice live on the birds and can be controlled by treating them with sodium floride. Mites live in the cracks and crevices in the house and come on the bird only to drink blood. They can be controlled by

painting the perches, nests, and the surrounding area with crankcase oil. Sparrows around the winter quarters should be destroyed as they are carriers of disease and vermin.

Incubating the Eggs

There are certain factors in the incubation of turkey eggs which determines the number of fully matured birds raised for market the following fall. The degree of success in turkey raising depends upon the number of fully matured turkeys raised in proportion to the total number of eggs set. The eggs laid must be given the best possible attention. The vigor of the breeding stock, proper feeding practices, percentage of fertile eggs, and careful incubation are all important links in the chain.

As the eggs are brought in from the breeding pen, they should be held in a room with a temperature between 40 degrees and 60 degrees F. and turned daily. They should not be kept over two weeks. The period of incubation of turkey eggs is 28 days. Turkey eggs may be incubated under chicken hens, turkey hens or in incubators. This bulletin will discuss artificial incubation only. In recent years, incubation of turkey eggs in incubators has become the most popular way of hatching poults. The methods are similar to incubating hens eggs. The incubator manufacturer should know more about the operation of his particular machine than any one else and his directions should be followed.

There are a few rules however, that apply to all incubators. The three important factors of successful incubation operation are temperature, humidity and ventilation. The temperature of the incubator room is important and for best results, it should be from 65 to 70 degrees F. A cellar usually provides the proper humidity but for early hatches is often too cold. If a room in the upper part of the house is used, the temperature is more apt to be suitable but this room is often too dry and the humidity is too low. The presence of any kind of odor in the incubation room indicates poor ventilation. Fresh air, brought into the room, should not blow directly on any part of the incubator. The foul air should be removed from the room so that to a person entering, the air seems fresh and clean. Each operator has his own problems to solve.

Artificial incubation has many points to recommend over incubation with hens. In the first place, it is possible to obtain a larger number of poults of the same age. This simplifies the difficulty encountered where too many different aged poults are running together as turkeys are especially cruel to smaller and weaker birds. Where a breeding flock of 20 hens is kept, 50 to 75 poults can be hatched out every 10 days. Two hatches will fill a 10 x 12 foot brooder house. A partition through the middle of the house will keep the two ages apart until the younger are old enough to get a favorable start in life. One important reason for using artificial incubation and brooding is to prevent the mother hen from transmitting disease to her brood. Freedom from disease is most essential in successful turkey raising. When artificial methods are followed, the transmission of disease from the parent stock to the poults is prevented. Another reason for not fol-

lowing the natural method is that a broody turkey hen does not lay eggs. With proper management, the hen can be broken of her broody spell and will again lay with only a few days loss in production. This assures more eggs during the breeding season and a larger number of poults when they are needed.

Care and Management of the Growing Flock

Brooding the Young Poults

A movable brooder house suitable for baby chicks makes an ideal set up for brooding the young poults. One hundred to 150 poults can be accommodated in a brooder house 10 x 12 feet. Extension bulletin 68 called the "Michigan 10 x 12 Foot Brooder House" gives the necessary plans and bill of material for the erection of such a house. A suitable feed hopper for starting the poults is shown in Fig. No. 7. If litter is used, the water fountain should be placed on a wire stand as this protects the health of the young turkeys.

Many turkey growers are using wire floors and because of the san-

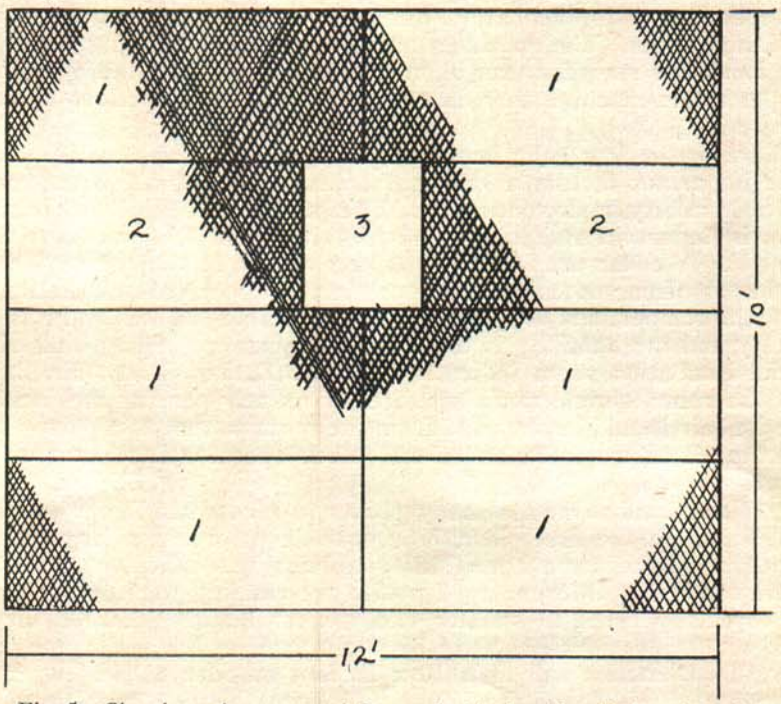

Fig. 5. Showing wire screened floor suitable for 10 x 12 foot brooder house.

1. Six frames of 1 x 4 inch material placed on edge and covered with ½ inch gravel screen 30 inches wide. Size of frames, 6 ft. x 2½ ft.
2. Two frames of 1 x 4 inch material placed on edge covered with ½ inch gravel screen 30 inches wide. Size of frame, 5 ft. x 2½ ft.
3. Space 30 x 24 inches for brooder stove.

itary conditions they afford they have been found to be very satisfactory. For young poults these frames may be made from 1 x 4 inch material placed on edge and covered with one-half inch wire cloth or gravel screen.

The two shorter frames are located so that a space of 30 x 24 inches is left as near the center of the house as possible. This space is for the brooder stove and it may be filled with bricks and covered over with sand until the stove is the desired height.

For the sun porch, a frame 6 x 12 feet is suitable for a 10 x 12 brooder house. This frame may be made all in one piece for ease in handling it. It should be made high enough so that the poults can easily get from the brooder house to the sun porch and back again. A fence with a cover may be provided to confine the poults to the sun porch.

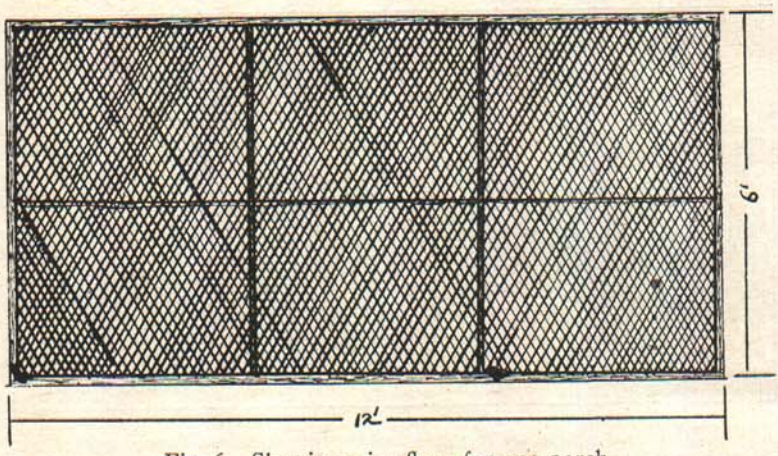

Fig. 6. Showing wire floor for sun porch.

This sun porch is made from one-half inch gravel screen 36 inches wide. The frame should be painted or asphalted before the gravel screen is put on. Outbreak of disease may occur with wire floors unless the floors are thoroughly cleaned at regular intervals. The poults during the warm part of the day may be confined to the sun porch while the frames are taken out and scrubbed. The droppings may then be removed and the floor can be washed and disinfected if necessary. The frames are then put back in their proper position and the house is ready for the poults again.

Perches should be put in when the poults are three or four weeks old. They should be placed close to the floor with that part of the perch next the wall higher than the part next the stove. They may be hinged to the wall to raise them out of the way when the house is being cleaned. The roosts should be made of 1 x 2 inch material placed on the flat side in order to aid in the prevention of crooked breasts.

Crooked breast in turkeys is a serious problem because such birds when sold are heavily discounted. So far no definite data is available as to any one factor that is definitely to blame for this condition. How-

ever, a large percentage of crooked breast can be prevented if the following points are followed:

1. Proper temperature and humidity maintained in the incubator.
2. Either direct sunshine or cod liver oil or both should be incorporated in the starting ration.
3. A proper balance of minerals in the diet.
4. The poults should not be crowded.
5. Keep the room temperature of the brooder house warm enough to be comfortable for the poults but not too hot. Too low a temperature will encourage crowding, while too much heat is not good for the poults. Good management practices with a suitable feed will keep to a minimum the number of crooked breasts in the flock.

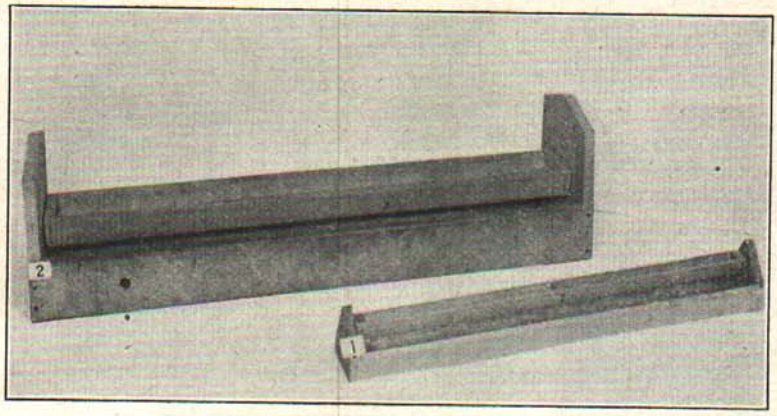

Fig. 7. 1 shows a suitable mash hopper for the first four weeks. The body is made of galvanized material while the ends and reel are of wood. It is 36 inches long, 4 inches wide and 2 inches deep. 2 shows a mash hopper suitable for use from four to eight weeks of age. This mash hopper is 4 feet long, 10 inches wide and 5 inches high. The body is made of 24 gauge galvanized material. The reel may be raised or lowered to accommodate different sizes of birds.

Newly hatched poults will eat their litter as readily as they will eat their feed. Therefore, no litter should be used during the first two weeks. Burlap sacks or newspapers can be used on the floor during this time and should be changed every day to prevent contamination. The sacks can be washed and used again but the newspapers should be burned.

A thermometer suspended from the edge of the hover with the bulb an inch from the floor should register 95 degrees F, for the first week. Each week the temperature should be gradually reduced about five degrees per week until it registers 75 degrees to 80 degrees F. A good indication of the proper temperature is to find the poults at night forming a ring directly beneath the edge of the hover. If this ring is outside the edge of the hover, there is too much heat; if the poults are hovering close to the stove underneath the hover or are crowd-

ing in the corners, there is not enough heat for them and the regulator on the brooder stove should be adjusted.

A wire screen placed around the hover for the first few days will keep the poults close to the source of heat and will prevent them from becoming chilled. At first, it should be placed 18 inches from the edge of the hover and it can be enlarged gradually as the poults learn where to go for warmth. When they are two weeks old, it can be removed. At this time, as a precaution against crowding, a burlap sack should be tacked across each corner of the brooder house.

Feeding the Poults

Baby poults should be fed as soon as they come from the incubator. They do not learn to eat as readily as baby chicks. This should be remembered for many folks think that if they place the feed before them the young birds will do the rest. Poults may be taught to eat by placing three or four larger ones with the young brood and as the older ones go to the mash hopper and eat the young ones will imitate them. As they are taken from the incubator, dip each beak in milk and then in mash. They will pick at each other and unconsciously learn to eat. Another method is to use a semi-liquid food such as cottage cheese or custard on top of the mash in small amounts. The poults like this food and can be taught to eat very quickly. A suitable custard can be made by beating up six eggs with one pint of milk and cooking slowly until a curd forms. Hard boiled infertile eggs are also relished by the young poults. They should be put through a meat chopper or ground up before feeding.

A starting mash and clean fresh water should be kept before the poults continuously. The ration which is suggested by Michigan State College is an all mash starter. After the first six weeks, scratch grain is added to it for the rest of the growing period. The use of the same mash as starter and grower simplifies the feeding practice. The mash suggested for rearing poults is as follows:

20	pounds yellow corn (ground coarsely)
17	pounds fine ground oats
10	pounds bran
10	pounds flour middlings
5	pounds alfalfa meal
14	pounds meat scrap
*10	pounds dried milk
*10	pounds soy bean oil meal
2	pounds calcium carbonate
1	pound salt
1	pound cod liver oil
100	pounds

*When liquid milk is fed as the only drink, the dried milk may be left out of the mash and an extra 10 pounds of ground yellow corn put in its place. If soy bean oil meal cannot be obtained, the meat scrap can be increased to 20 pounds and enough ground corn added to make 100 pounds.

Scratch Grain

50 pounds cracked yellow corn
50 pounds wheat

While the poults are in the brooder house or when they are raised in confinement, they should always have succulent green feed before them. This feed should be cut up in one-half inch pieces and placed in hoppers. The upper part of the alfalfa plant is suitable to use for this purpose. Lettuce trimmings, the tender parts of cabbage, and grass clippings will also serve as succulent feed. If long pieces of any succulent feed are given to young poults, they will eat them and a stoppage of the digestive tract often results. Throughout the growing

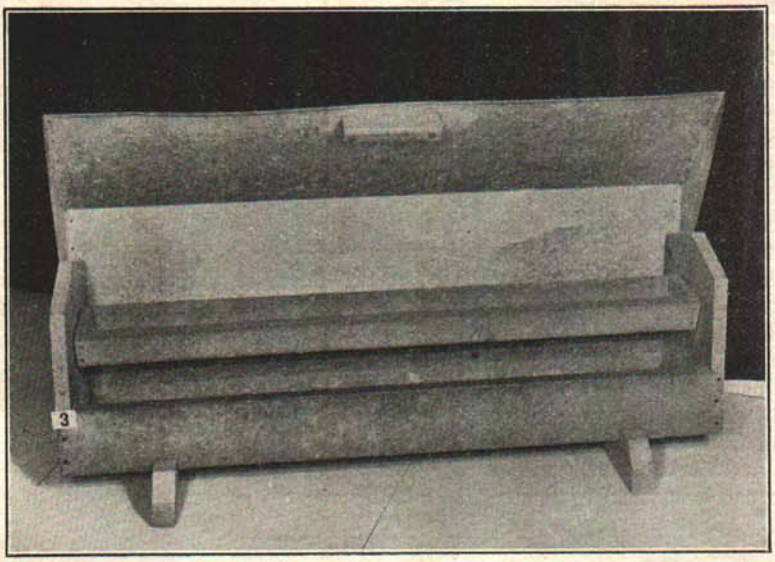

Fig. 8. A suitable mash hopper for the growing flock from 8 to 12 weeks of age. This is the same mash hopper shown in Fig. 7 with a cover to keep the feed dry when used outside. Two pieces of 2" x 4" raise it three inches above the ground.

period, the turkeys should always have a supply of green feed before them. As soon as they are old enough, the poults should range in an alfalfa, clover or June grass pasture.

Milk is an important ingredient in the ration of the growing turkey. It provides a quality to the meat that is distinctive. Any one advertising milk-fed turkeys knows that the consumer prefers this type of meat. Liquid milk must be fed intelligenty during the fly season because it attracts flies which are carriers of tape worms. However, liquid milk, when available, provides a cheap source of protein.

Grit should be supplied if the poults are being reared in confinement. When the poults are being reared in this manner, a dust box placed in the brooder house and filled with sand provides a place for the birds

to dust in. The sand should be changed often so that it will not provide a source of contamination.

Rearing the Poults

When the poults are to be reared in semi-confinement on a grass range, the brooder house should be located on land where no poultry has ranged for three or more years previously. This helps to insure freedom from blackhead, coccidiosis, and worm infestations. The house should be placed in the middle of a plot 100 feet square. By dividing this into four yards of equal size, the poults can have a new yard each

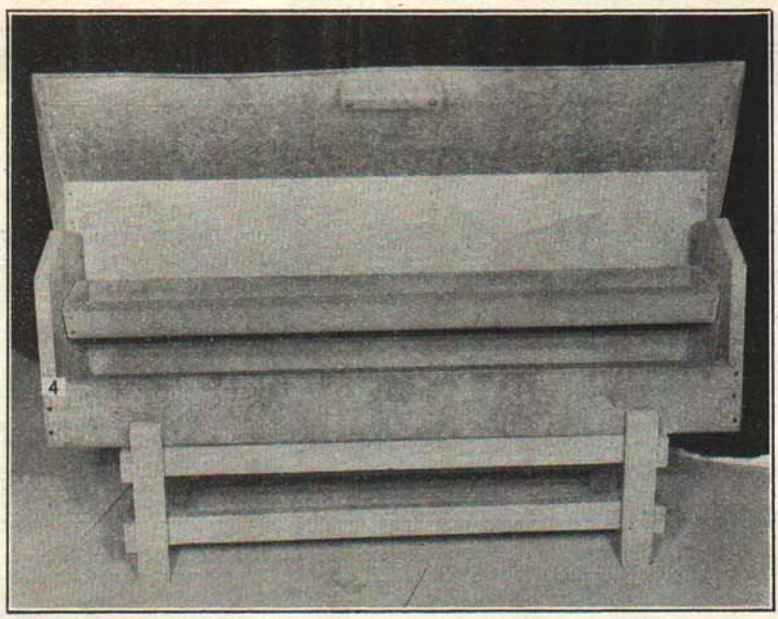

Fig. 9. Showing the same mash hopper as in Figure 8. It is placed on a stand 10 inches high. This type of hopper will carry the birds from 12 weeks to maturity.

week for four weeks. Two hundred feet of fence will be sufficient for one yard and it can be moved to enclose the new yard each week. There should be a door cut in each corner of the house to give the poults access to each yard. The regular door can be used as one of these. When the four yards have been used, the brooder house should be moved to a new piece of land and the same system followed for the next four weeks. At the beginning of the third month, the brooder house should be replaced by a summer shelter as described in Extension Bulletin 124. By increasing the dimensions given in this bulletin to 10 x 16 feet, it will accommodate 100 turkeys. This shelter should be located on a new piece of land two acres in area and placed in the middle of the plot. The growing poults are rotated as before but they are allowed to stay in each one-half acre yard a month before they

are moved to the next one. When they are ready to leave the fourth yard, the turkeys are six months old and should be ready to be marketed.

On farms, where a field of 10 or more acres is available annually for a three year rotation, the small yards may be dispensed with when the poults reach the age of 10 to 12 weeks. At this time, the fences are removed and the birds allowed to range from the shelter. Feed hoppers and drinking dishes should be moved each day and shelters each week always to clean ground. The young birds should be confined to the shelter each night. When they become fully grown, they may be allowed to roost in trees or on artificial roosts. The roosts should be built on skids so that they can be moved.

Shade of some kind is necessary for hot summer days. Where trees are not available, plenty of artificial shade should be provided. Frames

Fig. 10. Showing a summer shelter before wire netting was put on the walls. This building is 12 x 12 feet and will accommodate 100 growing turkeys.

covered with burlap can be hinged to the sides of the summer shelter under the eaves. These shades can be hooked up to provide protection from the heat and let down to protect the birds from high wind and rain.

After heavy rains when water puddles are left, the turkeys should be confined to their shelters. During this time, a small yard with a slatted floor may be provided where the mash hoppers and drinking fountains are placed in order to prevent the birds drinking dirty water and picking up contamination. The turkeys should be confined to this yard.

Finishing the Birds

Finish is a term used to describe the condition of any animal that when killed, will produce a high quality of meat for human consumption. In a turkey, the carcass should show a breast well fleshed and carrying enough fat under the skin to give a creamy appearance. There

should be NO pin feathers. The presence of pin feathers indicates a lack of finish. The thighs and legs should be well fleshed in order to give the carcass an appearance of compactness.

Turkey prices are determined by the finish of the birds offered for sale as well as by supply and demand. Since the finish is determined by the feed and management, attention is called to an experiment carried on by the Poultry Department in 1931. Four lots of poults were carried through the growing period on four different feeds which carried the following amounts of protein, 17, 22, 25, and 28 per cent. When the birds were killed and marketed, the pen on the high protein mash had the largest number of prime carcasses and the least number of pin feathers, while the low protein lot had the poorest carcasses and showed a high percentage of pin feathers.

Fig. 11. Showing the growing flock on range with the summer shelter in the background. Burlap sacks placed on the walls protect the birds from wind and driving rains.

Protein hastens maturity and finish comes only with maturity. There are two methods in bringing about maturity. The first and easiest method is to have the poults hatched early enough so that the birds mature naturally and the second is to feed a high protein feed so that maturity may be hastened. The starting and growing mash given on page 13 of this bulletin contains approximately 22 per cent protein and it is important that the flock should receive a mash of this type along with the scratch grain, especially if the growing birds were late hatched, in order to mature them. A large number of pin feathers on a bird shows that it is not matured and therefore is not properly finished.

There is a tendency for many turkey growers to cut down on the growing mash as the finishing period approaches and to increase the corn content of the ration. Corn gives a yellow appearance to the carcass which is to be desired but the protein content of the ration should not be sacrificed when the corn is increased. In fattening rations, there are two important ingredients:

1. The cereal grains such as corn, oats, and wheat or its by-products. Corn is usually an economical grain to feed. It provides fat readily when the bird is approaching maturity. It also gives a distinct yellow color to the carcass which is preferred on some markets. However, when it forms a high percentage of the fattening ration, most of that fat is deposited under the skin, in the abdomen and around the vital organs. This will tend to produce a dry type of muscle meat which is not desired by the consumer.

Oats are generally used in the fattening ration. They provide a suitable combination with either corn or wheat by-products. They contain more fibre than corn and slightly more protein.

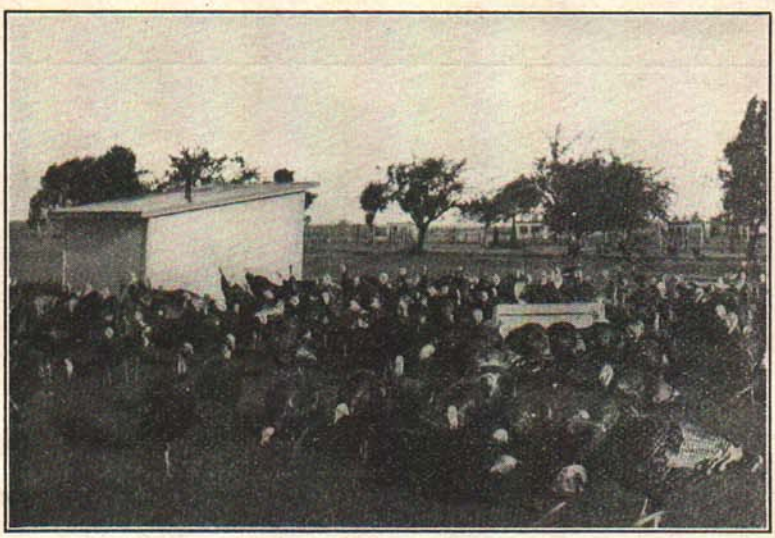

Fig. 12. The growing flock approaching maturity.

Wheat by-products, such as flour middlings and red dog flour, can be used in conjunction with corn and oats or, if no corn is available, they can be used as a substitute for corn. Both the oats and wheat by-products will produce a whiter type of fat than corn.

2. Milk. Milk in some form is the most important ingredient in the finishing ration. It is high in protein of exceptional quality. There is no other ingredient of the finishing ration that can take its place. The high quality of milk-fed turkeys raised in semi-confinement is an established fact on any high class market today.

MARKETING THE BIRDS

Michigan is unique in providing many different markets for turkeys. She has many cities of more than 10,000 inhabitants. Restaurants and hotels in these cities do or could serve turkey throughout the winter months. There are large numbers of summer resort hotels, pavilions,

and camps each summer. Each season the breeding flock together with the early hatched cockerels could be sold to these resorts during July, August and September to be served instead of the large quantities of cold storage stock used now. This State is dotted with country clubs, fishing and hunting lodges which provide potential markets for quality turkeys from May 1 to Thanksgiving. Transportation to these nearby markets by automobile is cheap and convenient. Roadside markets, which feature freshly slaughtered birds attract the tourist, the fisherman, the game hunter, and the football fan. Michigan turkey growers alone can take advantage of these markets.

A good rule to follow in the selection of market birds is to kill only those birds that are showing a good finish and are free from pin feathers. Turkeys intended for slaughter should be starved 12 to 18

Fig. 13. The breeders should be selected each year before the marketing season has arrived.

hours before being killed but given plenty of fresh water to drink during that time. This is necessary in order to empty the crop and digestive organs of as much feed as possible. Care should be observed that they are not unduly frightened when they are caught as they will fly against anything or trample and bruise themselves quite severely. This results in lower prices because of the poor appearance of the carcasses.

Killing the Birds

The equipment for suspending the birds by the legs can be shackles made for the purpose or a strong flexible cord with a two inch wooden button tied to the end. The cord is attached to a beam overhead so that the bird when being hung up by the legs will be in a convenient position for picking. A blood cup and killing knife complete the killing equipment. The blood cup is a can weighed down with lead with a hook on the inside. The cup is attached to the lower jaw of the bird to hold its head down which prevents the bird from scattering blood

over itself or the picker and from swallowing any of its own blood. The killing knife should have a narrow straight blade about four inches long and should always be sharp. After the bird has been suspended by the legs the picker takes its head in his left hand with the top of the head against the palm of his hand. The mouth of the bird is then opened, the killing knife inserted and a diagonal cut made across the roof of the mouth. This bleeds the bird.

Debraining the Bird

The knife is then turned over so that the back of it is against the upper beak of the bird. The point of the knife is shoved back through the cleft in the roof of the mouth to a point at the back of the skull where the skull and neck join. When the spot is reached, the knife should be given a half turn. If this is done correctly a sudden convulsion of the bird's body and a spreading of the tail indicate that the brain stick has been a success and the feathers have been loosened. They should then be removed as quickly as possible.

Removing the Feathers

There are three methods of picking turkeys.

1. The Dry Pick. In dry picking poultry, the picker depends on his skill in debraining the bird to loosen the feathers. Any bird that is debrained is unconscious of pain but will continue to move and struggle until the blood has left the body. The feathers should be removed during this period. To do this quickly, first remove the primaries and secondaries of the wings. Next, twist out the tail feathers with one movement of the hand. The order of removing the remainder of the feathers is breast, neck, legs, back, fluff, and finish with the short feathers on the wings. Do not take too many feathers in one handful as this may tear the carcass. One should always following a regular system in removing the feathers as this increases the speed. If the birds are free from pin feathers, the feathers will come out more easily and of course more quickly. Rubbing the skin, especially, the shanks during the picking process will spoil the appearance of the carcass. Always remember that speed is necessary in dry picking. Work fast.

2. Scald-pick. With this method of picking, the bird is killed as in dry picking, the blood cup attached to the lower jaw and the bird allowed to die. The body is immersed in boiling water for a few seconds and removed just as soon as the feathers are loosened. Birds are usually scald picked on a table. The table should be covered with clean sacks or burlap in order to prevent the skin from being broken. The feathers are loosened by the hot water cooking the muscle which holds each feather. Great care must be exercised or the skin will be rubbed off, and when the carcass has cooled, those areas will appear as brown blotches. If the birds are to be sold at once to a local market, the scald pick may be used. Never ship scald-picked birds as the carcasses deteriorate rapidly and upon reaching the market will go into the lower grades.

The skin on the shanks of the birds seem to become injured more readily than any other part of the carcass. To avoid this, the bird may be killed and the legs dry picked before scalding. When scalding the

carcass, scald only the body and wings of the bird being careful to get not water on the legs. This will produce a more attractive looking carcass as the skin of the legs will not be broken.

3. Slack or Semi-scald. This method is a combination of the hot scald and the dry pick. The water is held exactly 126 degrees F. The birds are put in the water before they are through bleeding and moved gently back and forth in order to get the water in to the skin. Hen turkeys are held in the water bath for 22 seconds and toms for 24 seconds. The feathers are then removed without rubbing the skin. It is very important that the water be held at exactly the correct temperature or a skin-cooked, poor appearing carcass will result.

Of the three methods of picking described, the dry pick method is the most practical when the turkeys are killed at the farm. Dry picked carcasses will stand shipment well when they are properly iced. Equipment necessary to maintain a uniform temperature of the water is expensive when the slack-scald method is followed. The hot scald method does give a more yellow appearance to the carcass than when the birds are dry picked. Some turkey growers dry pick their birds and plump them in scalding water long enough to smooth the skin and bring out the yellow color, then allow the carcasses to cool out on the rack. Care should be taken that the skin is not touched with the hands until after the cooling has been completed and the birds have dried off.

Cooling

When the birds are dry picked or semi-scalded, they should be hung up and allowed to cool. If the hot scald is used, the carcasses are generally immersed in ice water until all the body heat has left, which should take from five to six hours. Do not leave the carcasses in the water longer than necessary as this injures their quality. In cooling the dry picked carcasses, any room or building that can be locked usually is satisfactory. The weather at that time will be cool enough. If very early stock is being marketed it may be necessary to use artificial refrigeration. No dry picked birds should come in contact with water until they are thoroughly cooled out. They may then be packed, iced, and shipped.

SANITATION IN THE TURKEY FLOCK

Under sanitary conditions, the health of the turkey flock can be maintained as well as in the poultry flock. Many people have been forced out of the turkey business because of blackhead. Most turkey diseases can be prevented but few can be cured, so only these preventative measures will be discussed. Most of the diseases that affect chickens are also common to turkeys. For a discussion of the different poultry diseases see M. S. C. Extension Bulletins Nos. 53 and 54.

Before the poults are hatched, the brooder house should be thoroughly cleaned. All droppings, filth, and litter should be removed and the floor scrubbed with soap and hot water. The walls should be washed

down and all dust and cobwebs removed. When the cleaning has been properly completed, the disinfection of the house is a simple matter. Some disinfectant of recognized value should be used and every part of the interior of the house treated. Iodine Suspensoid Merck is especially useful because it kills worms, eggs, and coccidia and other microbes. When it has dried, the brooder stove is put in place, a fire lighted and the temperature is regulated. Burlap sacks and paper are put on the floor and the house is ready for the poults.

One of the requisites of a healthy turkey flock is to keep no chickens on the farm. Blackhead may be contracted by chickens and while they do not suffer a heavy mortality from this disease yet their presence provides a continual source of infection to the turkeys. Of course, the larger the number of birds kept on any farm the greater is the danger of their becoming infected with parasites or other diseases. A person should decide on either chickens or turkeys. Do not keep both unless rather elaborate equipment is available for keeping and rearing them separately.

The use of wire floors in the brooder house and sun porch for the first eight weeks is becoming a popular method of brooding the poults. There is less danger of picking up disease through infected droppings or becoming crop bound from eating the litter than when they are allowed to run on a floor covered with litter. In either case the brooder house should be cleaned at least once a week.

Liquid milk attracts flies which carry tapeworms. During the fly season, the brooder house or summer shelter must be located far enough away from any manure pile containing poultry droppings so that flies cannot reach both, or the turkeys may become infested with these intestinal parasites which cause so much harm.

A turkey should never be fed on the ground. Hoppers should be provided for all feed. Water fountains should be placed on a water stand covered with hardware cloth. This will prevent the birds from eating the moist soil surrounding it. The water fountains and mash hoppers should be moved to a new place **every day,** as the birds use this part of the range more than any other and the chance of contamination is that much greater. Turkeys should be confined to the house on wet rainy days as they prefer to drink from puddles of water rather than at the water fountain.

Disease is the greatest hazard of the turkey business. Upon its prevention depends largely the success of the turkey grower. Blackhead is one of the most serious diseases to combat. The semi-confinement method of rearing turkeys has proved most successful in Michigan because of the controlled management it affords. While the cost of feed is slightly higher than where free range is provided, the quality of the meat produced is superior. The whole story of sanitation is told in one word "CLEANLINESS". Cleanliness depends upon four factors:

1. Clean healthy stock.
2. Clean houses.
3. Clean range.
4. Clean feeding and drinking utensils.