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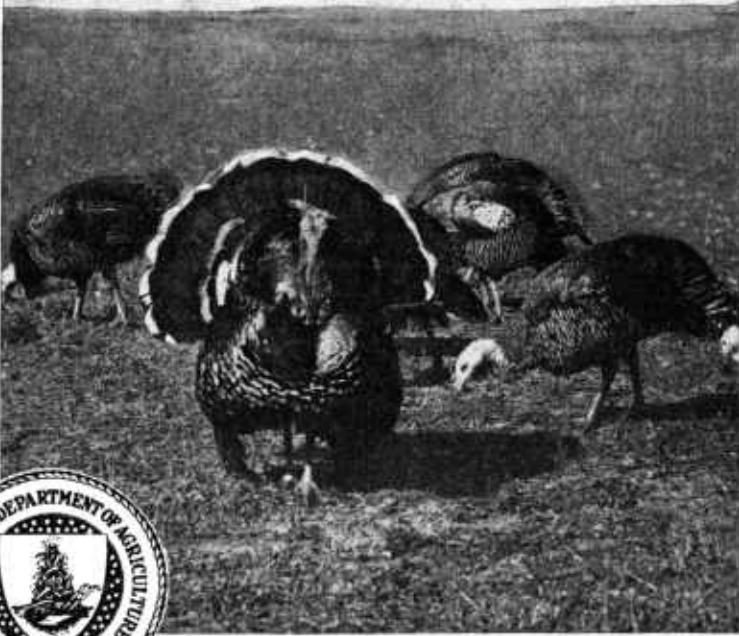
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TURKEY RAISING



TURKEY RAISING is usually carried on as a side line on general farms, though in some parts of the United States it constitutes the chief source of revenue from farming.

The number of turkeys in this country decreased for a time after the 1890 census, but during recent years the industry has been growing, largely because of improved methods of controlling turkey diseases and better methods of management.

This bulletin has been prepared primarily to inform those interested in turkey raising on modern methods of management. Most of the recommendations are adaptable to both small and large scale production.

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TURKEY RAISING

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THE TURKEY INDUSTRY OF THE UNITED STATES

TURKEY RAISING has long been an important enterprise in the United States because great quantities of turkey meat are required annually and its use throughout the year is becoming more popular. Producers should endeavor to make turkey raising more profitable by overcoming heavy losses from diseases that heretofore have been a serious handicap.

The enterprise is very adaptable, extending to practically all parts of the United States. The more important areas of production are the Middle Western, Northwestern, and Southwestern States, where large numbers of small flocks are raised annually on farms and ranches and where there are also many large commercial flocks. The number of turkeys in this country began to decrease about 1890, but by 1910 interest in turkey raising revived, and in recent years the industry has been growing, largely because of increased knowledge of blackhead disease and its control.

According to the census there were 3,688,000 turkeys on farms in the United States in 1910 and about the same number in 1920. The 1930 census showed 16,794,000 turkeys, but this was the number raised to market age instead of the number of breeding turkeys kept. This new census figure provides a much better measure of the in-

¹This publication is a revision of former editions prepared by M. A. Jull, senior poultry husbandman, and A. R. Lee.

dustry's actual size. The 1930 figure indicates a moderate increase between 1920 and 1930 in the number of breeding turkeys kept. The nine States leading in turkey production, as shown by the 1930 census, are Texas, North Dakota, Minnesota, California, Oklahoma, Oregon, Colorado, Virginia, and Idaho.

Where conditions are suitable and proper methods of management are followed, turkeys can be raised successfully with very simple equipment, therefore the capital outlay in the enterprise may be quite small. Except during the growing season managing the flock is fairly simple. Of course, constitutional vigor must be maintained in the breeding stock; the flock must be kept relatively free from disease; and the soil, especially where the poults are fed, must be kept

sanitary. Moreover, turkeys, even when well fed, will make good use of at least a limited range and in doing so will destroy many injurious insects, eat great quantities of succulent green feed, and pick up much waste grain, weed seeds, and other sources of nutriment. This fact reduces the cost of production and increases the profits.



FIGURE 1.—Bronze turkey, male

VARIETIES

All domestic varieties of turkeys have descended from the North American wild stock, comprising four varieties: The eastern wild turkey, which ranged over the eastern part of the United States from Maine to Florida; the

Florida wild turkey, which ranged over southern Florida; the Rio Grande wild turkey, which ranged over southern Texas and northwestern Mexico; and the Mexican wild turkey, which ranged over Arizona, western New Mexico, southern Colorado, and Mexico. It is probable, however, that these four wild varieties were of common origin and that most of our domesticated varieties, especially the Bronze, have descended from the Mexican wild turkey.

Six standard varieties of domestic turkeys are recognized by the American Poultry Association, an organization having as its primary function the promotion of standard qualities in all breeds and varieties of poultry in North America. The association publishes the Standard of Perfection, which contains concise descriptions of breeds and varieties of poultry, with illustrations of the most important ones.

Following is a brief description of each of the six varieties, namely, the Bronze, White Holland, Bourbon Red, Narragansett, Black, and Slate.

THE BRONZE

The Bronze, often called the Mammoth Bronze, is the heaviest and also the most popular variety. The male (fig. 1) is distinguished by (1) the rich, iridescent, red-green sheen of the plumage on the neck, wing bows, wing fronts, wing coverts, breast, front half of the back, and lower thighs; and (2) the lighter, brilliant, copper-colored bronzing of the rear half of the back, tail coverts, tail itself, and body. The bronzing in the tail, tail coverts, and body is bordered by a distinct narrow black band which in turn is bordered by a wide edging of pure white. The rear portion of the back has the broad

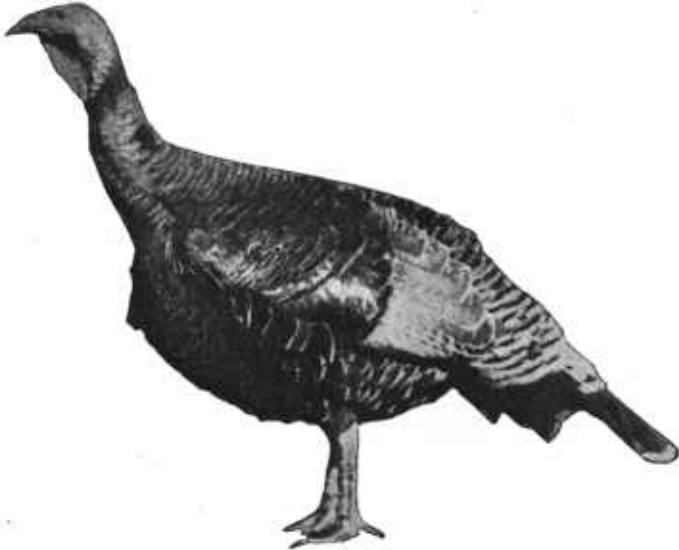


FIGURE 2.—Bronze turkey, female

bronze bar with the narrow edging of black but does not have the white tips. The plumage of the female (fig. 2) is similar to that of the male, except for an edging of white on the black bars on the back, wing bows, wing coverts, breast, and body. This white edging is narrow in the front of the body and gradually widens toward the rear. Both sexes have the same color pattern in the large wing feathers and in the main tail feathers and coverts. The main tail feathers and coverts have brown penciling (narrow bars) on a dull black background; the large wing feathers are evenly barred with black and white, the bars of the secondaries becoming indistinct as the back is approached. Creaminess, yellow, or yellowish brown in the pure white edging of the main tail feathers and coverts of the Bronze indicates an admixture of wild-turkey blood and is a serious defect in the standardbred Bronze. Lack of the copper-colored bronzing or a tendency for it to be greenish is also a serious color defect.

THE WHITE HOLLAND

The White Holland (fig. 3) probably originated as a "sport" from the Bronze or the wild turkey. Its plumage should be pure white in color and free in all sections from black flecking or ticking. The shanks and toes in this variety should be pinkish white.

THE BOURBON RED

The Bourbon Red male (fig. 4) is of a rich, deep brownish red color in all sections except the wings, tail, and breast. The primaries and secondaries of the wings are pure white, and the main tail

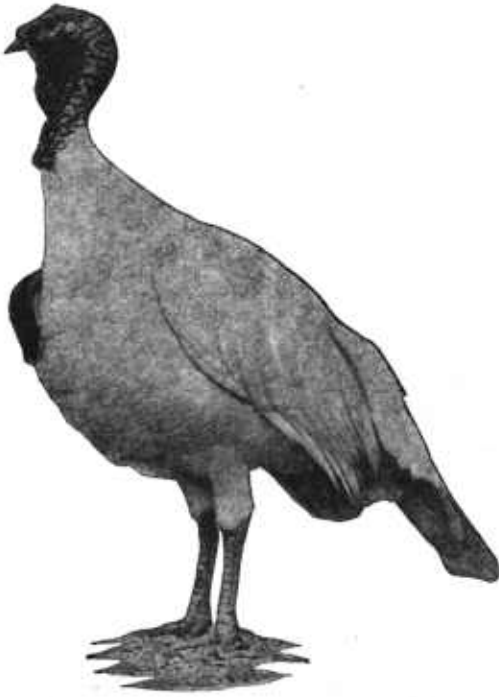


FIGURE 3.—White Holland turkey, male

feathers are pure white except for an indistinct bar of red crossing each feather near the end. The breast feathers are red with a very narrow edging of black. The color of the female is similar to that of the male, but there is a very narrow edging of white on the tips of the breast feathers. More than one-third of any other color except white showing in the large feathers of the wing or tail constitutes a standard disqualification in this variety. The rich, reddish color, without some black, is rather difficult to obtain and this black ticking or flecking is a rather common fault. A faded red, approaching buff, is also undesirable.

THE NARRAGANSETT

The Narragansett (fig. 5) generally resembles the Bronze in color pattern, but has no iridescent red-green sheen and no bronzing. The Narragansett colors are metallic black with light steel-gray edging and barring bordered, in certain sections, by a narrow black band on the end of the feathers. The plumage, as a whole, has a dark background of metallic black with a broad, light steel-gray edging, showing more of the light color in this edging as the body is approached. In the male, the colors of the wing fronts, wing bows, and wing coverts are the reverse of the colors found elsewhere, being light steel gray, ending in a narrow band of black. The wing coverts form a broad silvery bar across the folded wings. The neck and saddle are black, ending in a broad steel-gray band. The back is rich

metallic black, free from bronzing. The breast, body, and fluff are black, the feathers ending in a broad silvery-gray band edged with black. The large wing and tail feathers and the primary coverts are barred with black and white similarly to those of the Bronze, the barring of the upper secondaries becoming indistinct as the back is approached.

The plumage of the female is similar to that of the male in this variety, except that an extra edging of silvery gray is added to the ends of the feathers on the back, wing bows, wing coverts, breast, and body. The light edging should be narrow toward the front of the bird and broader toward the rear. The female in general presents a lighter appearance than the male. There should be a rich metallic black but no bronze barring in either sex. The offspring of a Narragansett mating sometimes have a bronze color, but such birds should not be kept for breeders.

THE BLACK

The Black (fig. 6), known in England as the Norfolk turkey, is lustrous greenish black in all sections of the plumage. Objectionable white tipping in the feathers of young turkeys of this variety often disappears after the first molt. Any variation from the solid black color should be carefully avoided in breeding this variety. The shanks and toes should be pink in mature birds and almost black in young birds.



FIGURE 4.—Bourbon red turkey, male

THE SLATE

The Slate (fig. 7) has an ashy-blue or slate-colored plumage, sometimes dotted with tiny black spots, which are undesirable. Feathers of any other color, such as white, buff, or red, constitute a standard disqualification. This variety does not breed true to color, and many of the offspring have both solid white and solid black as well as black-and-white ticking and splashing. The shanks and toes should be pink.

STANDARD WEIGHTS OF TURKEYS

The standard weights of the different varieties of turkeys as given in the Standard of Perfection are given in Table 1.

TABLE 1.—Standard weights of turkeys at various ages

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

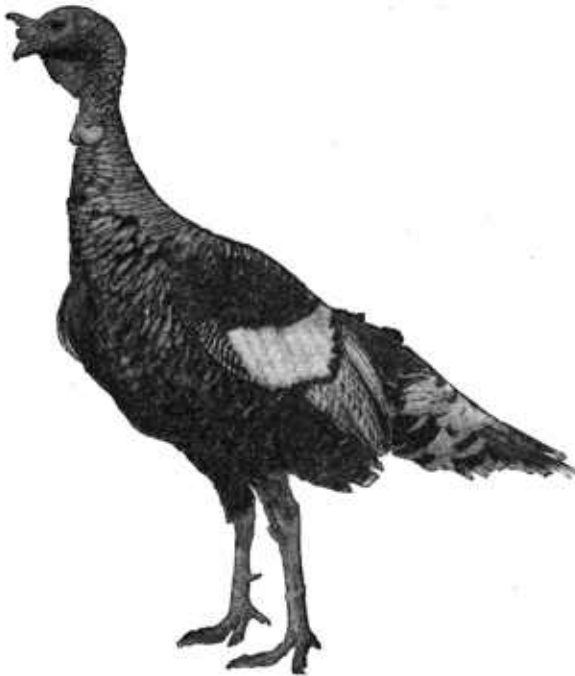


FIGURE 5.—Narragansett turkey, male

SELECTING BREEDING STOCK

The breeding stock is the foundation of the turkey industry, and the greatest care must be used in selecting both male and female breeders. Failure in this respect has undoubtedly been one of the principal reasons why satisfactory results have not been obtained on many farms and commercial plants. One of the first steps in improving conditions, therefore, is more careful selection of the breeding stock.

The most satisfactory time of the year to select breeding stock is in November or December, especially before large numbers of turkeys are sold for the Thanksgiving and Christmas markets. Selecting birds early in the season makes possible a choice from a larger number and, what is more important, saves the best-developed and most vigorous birds for breeding instead of marketing them. New blood may be introduced into the flock or a beginning with turkeys may be made by purchasing hatching eggs instead of breeding stock, but the purchasing of breeding stock is recommended, and new birds should be quarantined for three or four weeks in order to detect any disease that they may be carrying.

Turkeys are raised for meat rather than for egg production. The breeders, therefore, should have compact, meaty bodies. The breast-bone should be straight, the back broad, especially at the shoulders,

and the breadth carried well back toward the tail. The body should be deep, with the breast so broad, full, and well rounded that the breastbone does not protrude prominently. Other important points are full, bright eyes, a broad head, and stout legs set well apart and not too long. Above all else, the birds should be vigorous. When pedigrees and performance records of the birds' ancestors are available, selection should be based on fertility, hatchability, livability, good growth rate, and other desirable factors, as well as on the physical points mentioned above.

It is wise to select or build up a flock of purebred turkeys. It costs no more to raise purebred stock than mongrels and the purebreds are usually heavier and command higher market prices. Also, if good standard qualities of shape and color are maintained, some of the birds can be sold for breeding purposes at increased prices.

MANAGING BREEDING STOCK

Results in turkey raising depend to a large extent on the kind of breeding stock used each year and the manner in which it is managed.

BREEDING PENS OR INCLOSURES

Until a few years ago breeding flocks were ordinarily allowed free range throughout the breeding and laying season. (Fig. 8.) This practice often gives unsatisfactory results because the nests can not be found readily and therefore the eggs can not be gathered daily. Many breeding flocks are now kept in good-sized breeding pens or inclosures with nests conveniently located inside or outside the roosting shed. (Fig. 9.) For a pen of 12 to 15 birds a yard of 20 to 25 square rods is large enough. Frequently an orchard is very satisfactory. A hog-proof fence about 5 feet high will confine the turkeys; they are not likely to fly over the fence, because they can not rest on the top wire. Fences should be tightly stretched and should be dog proof, because dogs and coyotes are very destructive in turkey flocks. Board or rail fences should be dog proof and fairly high with strands of wire above the top to prevent the turkeys from perching on the fence. If turkey hens persist in flying over the fence the flight feathers of one wing may be cut, but



FIGURE 6.—Black turkey, male

the wing of a breeding male should never be clipped, as the clipping may interfere with mating.

Sanitation in the breeding yards must not be neglected. Either the fences and shelters should be made portable and moved each year to clean ground, or double yards should be constructed, one yard being used for two successive years and then the other, which in the meantime has been kept free of poultry of all kinds and of drainage or refuse from other poultry yards.

If more than one breeding group, often called a breeding pen, is maintained, they must be isolated from each other. This can be done with double fences, 12 feet or more apart, or with single fences

built solid for about 3 feet above the ground, so that the turkeys in the different pens can not see each other.

MATING

Best results in mating are obtained when from 10 to 15 females are mated to a healthy, vigorous tom. If more hens are kept more males should be used. As a rule good fertility will result when several toms are kept with a flock of hens. Many breeders, however, feel that better results are obtained by alternating the toms in a breeding pen daily, allowing only one at a time with the hens and penning the others out of sight. The number of hens used to one tom in mat-



FIGURE 7.—Slate turkey, male

ing indicates the relative importance of the male bird. The type and constitutional vigor of the tom selected is very important, although the females should also be kept up to standard as far as possible. Standard color and weight should also be considered when making up a breeding pen.

Most breeders prefer to mate a vigorous, well-grown young tom with yearling hens or with early hatched pullets. Yearling and older toms may be used if desired, but they are often sterile and there is danger that their excessive weight may cause injury. The spurs of a yearling or older tom should be trimmed smooth, as should the toenails of all breeding males, regardless of age. The continued use of early hatched pullets for breeding gives very good results and such pullets lay more eggs than older hens. The latter should be marketed

about June 1. If older hens are used in breeding it is advisable to replace 3-year-old females with young birds, since egg production decreases rapidly after that age. Immature stock should never be used as breeders.

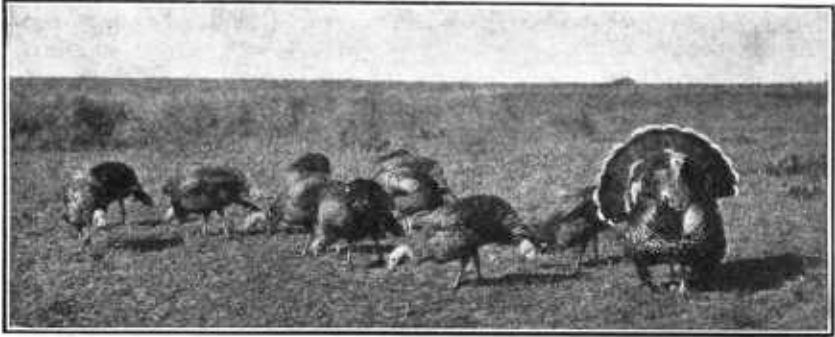


FIGURE 8.—Breeding flock of Bronze turkeys on free range

It is not advisable for the average producer to inbreed turkeys, as this practice has been found in many cases to lower the vitality of the stock. It is a good plan to get new blood by purchasing hatching eggs or male stock from a reliable outside source every two or three years.

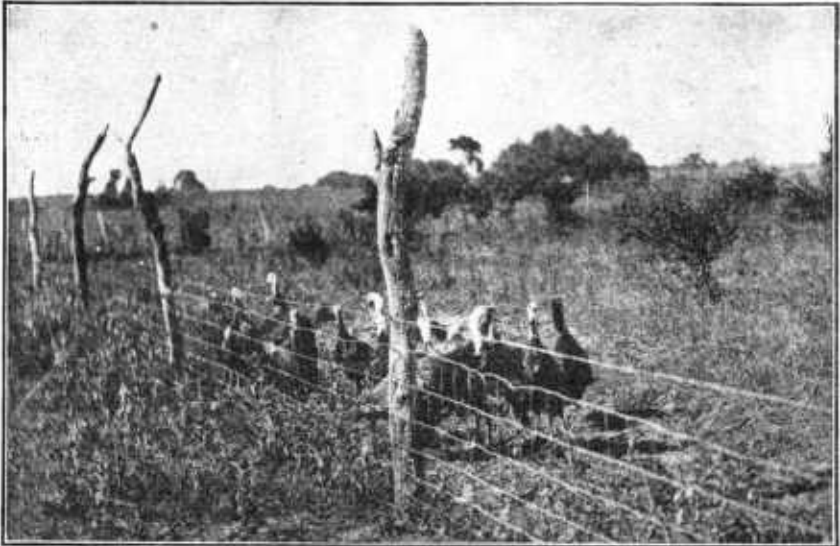


FIGURE 9.—Breeding and laying pen inclosed by a hog-proof wire fence

EGG PRODUCTION

The time of year at which turkeys naturally lay depends largely on the climate of the region in which they are raised, being earliest in the South. Artificial light is sometimes used to obtain early eggs by lengthening the working day, as is done with chickens. Soon after

inating begins the female looks for a nesting place, and about 10 days after the first mating she begins to lay. The number of eggs produced per bird depends on the breeding of the stock as well as on management. Under ordinary circumstances a young turkey hen should lay from 40 to 50 eggs during the normal breeding season, if she is broken up whenever broodiness occurs. The normal breeding season begins late in the winter or early in the spring and lasts until June.

Turkeys are not extensively trap nested, but the practice is carried on by producers who wish to pedigree the poults and carry on selective breeding. A simple form of trap nest is illustrated in

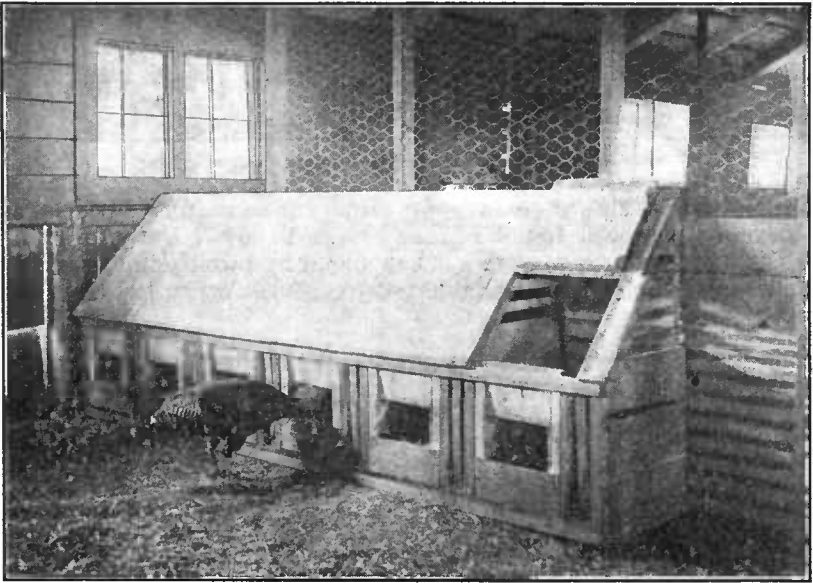


FIGURE 10.—Turkey trap nests. The bird enters through the trap-nest opening near the floor and is released through the hinged door at the top

Figure 10. The turkey enters at the front through the trapdoor, which closes automatically when the turkey is inside. The door at the top of the coop is opened to release the bird from the nest.

When incubators are used to hatch the eggs, the turkey hens may be broken of their broodiness so that they will continue laying. Breaking the hens of broodiness is very desirable because it permits the hatching of a relatively large number of early turkeys. The birds hatched no later than about June 20 are the ones that grow and mature most satisfactorily and therefore attain the best size for the Thanksgiving and Christmas markets. Early hatched birds should be marketed at Thanksgiving or before and those of later hatches can be used to supply the Christmas and New Year demand. There is some demand for freshly dressed turkeys at all times of the year. To meet this demand turkeys may be hatched from eggs laid during summer and fall. By the use of artificial light and proper feeds, hatchable eggs can be produced at almost any time of year.

Turkey hens like to lay out in the range lots, and it is natural for them to seek secluded places. Yards that have comparatively short grass and that are free of bushes or other places of concealment are best, because such conditions discourage the birds from laying outside the nests provided for them. A lookout for hidden nests must be kept even when the breeding birds are confined to small yards; otherwise, eggs may not be collected regularly and may be chilled, partly incubated, or destroyed by animals. Sometimes the hidden nests can be found by watching the turkey hens carefully as they make their way to them, but an easier and quicker method is to confine the hens early some morning soon after they come from the roosts and then let them out in the afternoon; the laying hens will make straight for their nests in order to lay the eggs they have been holding. Nests are easily made of boxes or barrels placed inside the shelter or outside in the yards.

FEEDING

Feeding young breeding turkeys is largely a matter of supplying a growing ration in the fall and early in the winter, and a laying ration late in the winter and in the spring. Unless breeders are to be kept over for a second year they should be marketed, if possible, about June 1 in order to reduce feed costs and to aid in preventing the spread of blackhead and other diseases that may affect the adult turkeys during the summer. If breeders are to be held over for more than a year, and if a good summer and fall range is provided, well away from the growing stock and where insects and green feed are abundant the breeders will do well on a daily feeding of whole grain such as a mixture of equal parts of corn, oats, and wheat. This mixture should be fed at the rate of about three-tenths pound per hen and six-tenths pound per tom daily, as a supplement to feed obtained from the range.

Later in the fall, winter, and spring the rations for breeders, especially young breeders, may be the same as the growing rations normally fed to young stock, since any ration that is satisfactory for growing birds is a good wintering and laying ration. A simple "5-point" mash formula, such as that suggested for growing poults, makes a good feed for carrying the breeders through the winter and spring since it meets the demands of the birds both for continued growth and for egg production. Such a mash may be compounded as follows:

	Parts by weight		Parts by weight
Ground yellow corn.....	30	Oyster shell or limestone.....	4
Middlings or ground wheat.....	22	Cod-liver oil.....	2
Dried milk.....	15	Steamed bone meal.....	1
Wheat bran.....	10	Salt.....	1
Meat scrap or fish meal.....	10		
Alfalfa-leaf meal.....	5	Total.....	100

In this ration 10 per cent of either ground oats or ground barley may replace 10 per cent of ground corn. The dried milk may be omitted and the meat scrap or fish meal increased to 20 per cent, if the dried milk is expensive or difficult to obtain.

This mash may be kept before the birds all day in feeders so constructed as to prevent contamination with droppings. Scratch grain also should either be fed in hoppers or offered late in the afternoon at the rate of approximately one-fourth pound per breeding hen and one-half pound per breeding tom per day, or enough to comprise about one-half of the total grain feed consumed. The scratch grain may be any one grain or a mixture of almost any grains. If it consists of only one grain, variety in the ration may be obtained by using different grains in the mash. Not more than half of the

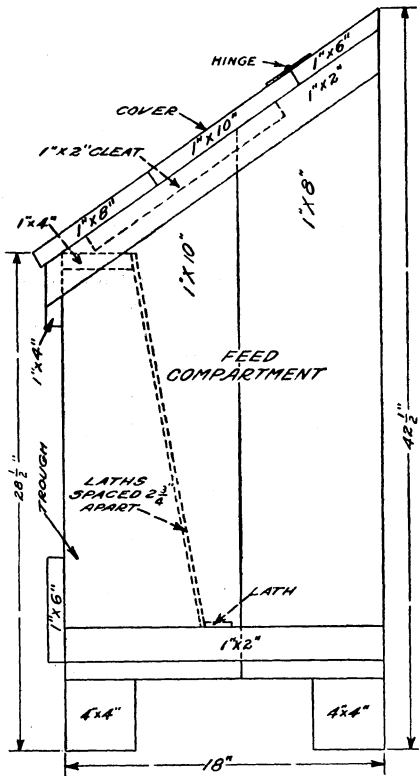


FIGURE 11.—End elevation of rack for feeding alfalfa hay

entire ration should consist of oats or barley or both. Two parts of corn and one part each of wheat and oats make a good scratch mixture. Wheat, corn, oats, barley, and the sorghums are all good feeds. Yellow corn is very valuable on account of its vitamin A content and, unless it is too expensive, should be fed up to 40 or 50 per cent of the entire ration. New corn is satisfactory if it is dry. Rye is not a good poultry feed and if used at all should not comprise more than one-eighth of the scratch ration. Turkey hens consume a little less than one-half pound of mash and scratch grain per day, when practically all their feed is furnished.

In addition to the mash and scratch grain, plenty of fresh green feed or alfalfa hay should be provided. Figure 11 shows a plan for a suitable feeder. If the birds receive plenty of direct sunshine but little or no fresh green feed, the alfalfa products, yellow corn, and freshly mixed cod-liver oil should be fed in order to provide enough vitamin

A. If the birds have an abundance of green feed and the amount of direct sunshine is limited, the alfalfa products and the yellow corn may be left out of the feed. If the birds have free access to direct sunshine and receive plenty of fresh green feed, the alfalfa products, yellow corn, and cod-liver oil may be omitted. The dried milk may be omitted from the mash if plenty of liquid milk is fed.

If desired, the oyster shell or limestone may be fed separately in hoppers, but mixing it in the mash saves labor and prevents excessive consumption. Gravel or hard grit should be provided to furnish grinding material. Clean water, fed in contamination-proof vessels, should be provided at all times.

COMBATING DISEASES AND PESTS

Turkey raisers to be successful must follow some system of sanitation. Many growers have been successful in preventing diseases and the attacks of parasites in their flocks by providing range on clean soil, that is, soil on which no poultry has ranged for at least two years and on which no poultry manure has been spread; feeding their birds from feeders that can not be contaminated by droppings; and keeping the quarters sanitary at all times.

BLACK HEAD

Although other infectious diseases sometimes affect turkeys, blackhead is by far the most destructive ailment. It is caused by one of the Protozoa and is primarily a disease of the caeca (the blind pouches of the intestine) and the liver, but the fact that the head of the affected bird often becomes discolored has given the disease its common name, blackhead. It attacks turkeys most frequently, but chickens are often affected by it without showing symptoms; thus the chickens carry and spread the infection to turkeys when allowed to range with them.

Although blackhead affects adult turkeys, it occurs principally among poults between the ages of 6 weeks and 6 months. It is found to a greater or less extent throughout the United States. The turkeys affected by blackhead, like all birds having infectious diseases, should immediately be removed from the flock to prevent the spread of the disease. The best procedure is to kill the sick birds and burn or bury the bodies, as no treatment has been found satisfactory for general use. Move the flock to clean ground, if possible; but if this can not be done clean out and disinfect the roosting place, plow the ground in the yards, and install a system of yard sanitation. Keep chickens and all other poultry away from turkey yards at all times in order to prevent infection from this source. The organisms which cause the disease may be carried by flies, blown with dust, conveyed in contaminated soil on the feet of the caretaker, or spread for considerable distances in other ways.

Several measures of preventing blackhead are practiced, the chief of which are: (1) Obtaining eggs or stock from flocks known to be healthy; (2) quarantining and worming all new stock to remove any caecum worms; (3) wiping the eggs to be incubated with a cloth soaked in an 85 per cent solution of grain alcohol or a 4 per cent solution of cresol compound; (4) keeping the poults on clean ground at a considerable distance from chickens; (5) excluding, so far as possible, pigeons, sparrows, and persons from the turkey houses and yards; (6) frequently cleaning and occasionally disinfecting houses, feed troughs, and all other equipment; (7) feeding only in clean feeders; and (8) immediately killing and completely burning all affected birds. Feeding sour milk helps to keep turkeys in good health and possibly to reduce the activities of the organism that causes blackhead. Clean range, clean quarters, clean feed, and clean water are most important. Diseases and parasites of turkeys are discussed in detail in Farmers' Bulletin 1652, Diseases and Parasites of Poultry.

LICE AND MITES

Lice may cause high mortality among young poults, those badly infested gradually becoming weaker until they die. Head lice are the most troublesome and are found close to the skin near the top of the head, above and in front of the eyes, and under the throat. Applying an insect powder, preferably sodium fluoride, when the hen is set, is an easy method of preventing lice from getting a start among poults. Apply the sodium fluoride among the feathers, working it well down next to the skin, one pinch on the head, one on the neck, two on the back, one on the breast, one below the vent, one at the base of the tail, one on each thigh, and one scattered on the underside of each wing when spread. If this treatment is not applied hatched poults are almost certain to have lice.

If the hen has been treated in this manner before being set, and the poults are not exposed to infested stock or premises, they will remain free from lice indefinitely. It is well, however, to examine the poults occasionally and, if lice are found, to apply sodium fluoride sparingly. It should not be applied until the poults are at least a week old, and then only two very small pinches should be used. Distribute one of these on the neck, the top of the head, and the throat, and the other on the back and below the vent. After the poults are old enough to roost, control lice by applying nicotine sulphate to the top surface of the roosts with a paint brush. Repeat the treatment frequently to obtain best results. Sodium fluoride applied as directed for delousing setting hens or as a dip will completely eliminate all species of lice from mature stock.

The dipping method consists of immersing mature fowls in a large tub of solution made by mixing 1 ounce of sodium fluoride to each gallon of tepid water. Immerse the birds for only a few seconds, raising the feathers at the same time to allow the dip to penetrate to the skin. Dip the birds on a warm day, preferably in the morning, so as to give them time to dry before night.

Destroy red mites in the roosting quarters by painting the roosts and roost supports with anthracene oil, crude oil, crank-case oil, or any coal-tar disinfectant. Make the application light but thorough, and preferably in the morning.

The fowl tick or blue bug is one of the worst pests of turkeys in the Southwest. It can be controlled by the methods advised for controlling red mites.

PROTECTION FROM COLD AND DAMPNES

Under ordinary conditions full-grown turkeys do not require much protection from the weather, but in the northern part of the United States, it is desirable to provide covered roosting sheds during the winter. An open-front shed with a reasonably tight roof and dry floor and so arranged that the north, west, and east sides can be closed against storms will give ample protection. Roosts made of 2 by 4's laid flat, and placed about 2 feet apart and 3 to 4 feet above the floor, should be provided in this shed, and the space under the roosts inclosed with poultry wire. In the southern part of the United States there is little need for well-built turkey houses, but during damp and cold or stormy weather the turkeys should have protection of some kind. They should not be exposed to dampness, but they can stand a considerable amount of dry cold.

INCUBATING TURKEY EGGS

The vigor of the breeding stock, the manner in which it has been managed, and the care given the eggs will determine, in large degree, the hatchability of the eggs. An important measure of success in turkey raising is the number of fully matured turkeys raised in proportion to the number of hens in the breeding flock. An average of 20 mature birds raised per hen is considered very good in well-managed turkey flocks, whereas in most general farm flocks 10 to 15 mature birds per hen would be a good average.

The eggs should be collected regularly every day and kept in a cool place. They may be turned every day while being saved for hatching but should be handled carefully. For best results they should not be kept longer than a week or 10 days and should not be exposed to temperatures above 60° F. or below 35°.

The period of incubation of turkey eggs is 28 days, and the method much the same as that used with chicken eggs. Turkey eggs can be successfully hatched by turkey hens or chicken hens, or in incubators. Hatching in incubators is best and is coming into more general use, especially on farms and ranches where turkeys are raised in large numbers. Turkeys hatched and reared by hens, especially chicken hens, are likely to contract disease and become infested with parasites at an early age. Sitting turkey hens can cover from 15 to 18 eggs; chicken hens, from 7 to 10 eggs.

NATURAL INCUBATION

Hatching the eggs under turkey hens is widely practiced and is often the most practical method. When the turkey hen becomes broody and has remained consistently on the nest for two or three days, she should be given her eggs. If several turkey hens are sitting at the same time, care should be taken that each gets back into her own nest. Nests are most conveniently arranged on the ground, in boxes about 2 feet square, or in barrels. If rats are a menace, the nests should have protection against them and should always be made proof against larger animals so that the turkey hen will not be disturbed or the eggs destroyed. The nests should be flat and shallow, as deep nests may result in crushed eggs or crushed baby poults. Nests with sod bottoms and only a little straw to keep the eggs from rolling into the corners are generally satisfactory. Nesting batteries in which each hen is provided with a small individual run so that she can get off and on the nest at will are very good. With this method, the only care necessary is to see that feed and water are always before the hens and that each one returns to her own nest. If individual runs are not provided, the hens should be taken off daily, allowed to exercise and eat, and then returned to their own nests. Plenty of water to drink and clean, wholesome grain feed, such as a mixture of wheat, oats, and corn, should be provided, and good alfalfa hay should be kept before the hens.

Turkey or chicken hens, before being set on turkey eggs, should be treated with sodium fluoride as previously directed.

ARTIFICIAL INCUBATION

Correct incubator temperatures are much the same for turkey eggs as for chicken eggs, but the greater size of the turkey eggs necessitates some adjustment of the apparatus used in measuring the temperature. This is true in nearly all kinds of incubators except those of the forced-draft type. The relative position of the thermometer in the egg chamber is important in the accuracy with which it records the temperature. The proper position for the thermometer is usually indicated in the directions for hatching turkey eggs that are furnished by the manufacturers of the incubator. As a general rule, with its bulb just clearing the eggs, the thermometer should read 101° or 101.5° F. at the beginning of incubation, and the temperature should be gradually raised to from 102.5° to 103°. Forced-draft cabinet incubators are operated at from 99.5° to 100°. Temperature can best be regulated, however, by placing the thermometer in the position recommended by the manufacturer, and then following the manufacturer's instructions for hatching turkey eggs, making sure that the egg trays do not sag.

Turkey eggs lose about 3.5 per cent less moisture during incubation than do chicken eggs, notwithstanding the fact that turkey eggs require about 7 days longer to hatch. Excellent hatches have been obtained when the percentage of moisture loss, based on the weight of the eggs just before they were set, ranged within the following limits: After 6 days of incubation, 2 to 3 per cent; after 12 days of incubation, 4.1 to 6 per cent; after 18 days of incubation, 6.2 to 9 per cent; and after 24 days of incubation, 9 to 11.9 per cent.

On this basis, a dozen turkey eggs of normal size should lose about 1 ounce for every six days of incubation. Moisture loss can be gaged by the size of the air cell, but no standards for normal evaporation as indicated by the air cell are available. The air cells of turkey eggs, however, are smaller in proportion to the size of the eggs than are those of chicken eggs, because normal evaporation in chicken eggs is considerably higher than in turkey eggs. When more moisture is needed in the incubator it can be provided by putting in water pans; when less moisture is needed the water pans may be removed or the ventilation increased.

As a rule the eggs should be turned three or four times daily. They should be tested, preferably on the eighth and again on the twentieth days, and all infertile eggs and those having dead germs should be removed. Cooling the eggs once or twice a day until they feel slightly cool to the face is recommended by some producers. Turning and cooling should be discontinued about the twenty-third day, and the incubator door should be darkened and kept closed until hatching is completed. The poults may then be left in the nursery trays in the incubators for about 24 hours or put in the brooder and fed as soon as hatching is completed and the poults thoroughly dried off. There is no good reason for withholding feeding longer than 24 hours. If feed is withheld for a much longer period when the poults are in the brooder, they may eat the litter.

Shipping day-old poults in specially built strawboard boxes has been found satisfactory. The container is larger than that ordinarily used for baby chicks, 60 poults commonly being placed in each box.

RAISING POULTS

There are few turkey-raising problems so important as brooding and rearing the poults, because the greatest losses in turkey raising usually occur in the first few weeks of the birds' lives. Heavy mortality among the poults may indicate that the breeding stock used was low in vitality or was poorly managed, but it more often indicates poor feeding or management of the poults. The importance of keeping both the poults and the breeding turkeys on ground free from infection and away from chickens can not be overemphasized. Improper brooding methods cause great losses, because turkey poults are very susceptible to cold, dampness, overcrowding, overheating, unsuitable feeds, and unsuitable litter, and they succumb readily to attacks of diseases and parasites.

BROODING

The poults may be brooded naturally by turkey hens or artificially by brooders. Brooding by turkey hens provides a never-failing source of heat, allows the poults to be raised in small flocks, and permits advantage of free-range conditions to be taken. Its disadvantages are that the young turkeys may contract diseases or become infected with parasites from the hens, and they may wander too far and be killed by storms or predatory animals. Artificial brooding makes it easier to maintain proper sanitation, keeps down costs, and puts the poults more directly under the control of the operator.

NATURAL BROODING

Brooding poults by turkey hens is not difficult although several details should receive careful attention. As soon as the hatch is completed and the poults begin to run out from under the sitting hen, transfer the hen and her brood to a coop. A coop of simple design, such as the A-shaped type (fig. 12), large enough to accommodate a turkey hen comfortably, and well built to protect the brood from rains and natural enemies, is all that is required. It should be about 5 feet long, 3 feet wide, and 3 feet high, with a raised, rat-proof floor. Provide good-sized screened openings for ventilation in hot weather. These openings should be so fixed that rain will not beat into the coop. Have a separate coop for each hen, and if there are several broods place the coops some distance apart on well-drained soil where the grass is fairly short.

For the first day or so it is well to confine the poults in the coop with the mother hen. Then make a small yard, using boards or wire around the front of the coop, and allow the poults to run in and out at will. However, they should not be allowed to run in long, wet grass, and during a heavy rain they should be confined to the coop. Move the coop and yard to fresh ground every few days, clean it frequently, and disinfect it occasionally. When the poults are about a week old the mother hen may be allowed to roam with her brood, but care should be taken to see that the entire brood returns in the evening and is protected at night from predatory animals. Good results may be obtained by keeping the mother hens confined and allowing the poults to range, but the brood should be properly sheltered during rainstorms or damp weather,

which are apt to cause high mortality. The poults may be kept with the mother hen for three months or more, but better results are usually obtained by moving them to a separate rearing field on clean ground when they are from 8 to 10 weeks old.

ARTIFICIAL BROODING

The practice of brooding poults artificially is becoming more prevalent and is usually more successful than brooding with turkey hens. The methods used in artificial brooding are very similar to those used in raising chicks, which are discussed in Farmers' Bulletin 1538, Incubation and Brooding of Chickens. A colony house or permanent brooder house that is suitable for brooding chicks is equally

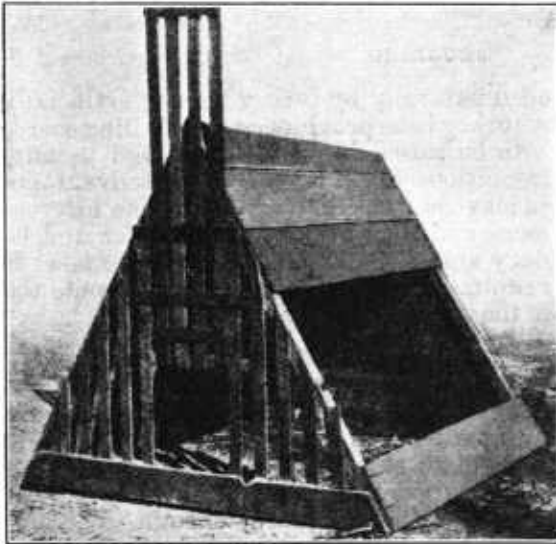


FIGURE 12.—A well-built brood coop which can be used either for setting a turkey hen or for raising a brood of poults

suitable for turkeys, but fewer birds should be put in the house as turkey poults are larger than chicks. Between 75 and 125 poults should be placed under one 52-inch hover in the average colony-brooder house. Larger hovers and larger brooding rooms will accommodate 225 poults or more, but only an experienced operator should attempt to raise groups larger than 125. The prevailing custom is to use brooder stoves in portable colony houses or permanent brooding quarters.

The colony houses may be moved several times each season, thereby giving the poults plenty of free range on clean soil. Since black-head is closely associated with insanitary conditions, special effort must be made to keep the houses, runs, and yards clean. If permanent brooder houses are used, a floor of concrete from 12 to 14 feet wide or a small gravel or cinder-floored yard is often used in front of the house. A skeleton framework covered with $\frac{1}{2}$ to 1 inch mesh wire may also be used either with the permanent brooder houses or with the colony houses. (Fig. 13.) Poults are regularly confined to this small yard for the first eight weeks and in some cases have been successfully reared to market age in it.

In artificial brooding the poults are managed in much the same fashion as when hens are used for brooding. However, one point of great importance in brooding poults artificially is to make sure that they do not crowd together while in the brooder house. This can be avoided by constant attention, keeping an even temperature,

and providing good ventilation. A dim light under or above the hover at night seems to have a quieting effect on the poults. The temperature should be high enough to keep the poults comfortable but not high enough to be detrimental to their health. When the poults are first put into the colony house with the brooder stove the temperature 3 inches above the floor under the hover should be from 95° to 110° F. This temperature should be lowered gradually as the weather becomes warmer until the poults are 8 to 10 weeks old, when they require little or no heat, especially in the daytime. It is a common practice in cold weather to keep the room temperature rather high, at 80° to 90°, to prevent crowding. The

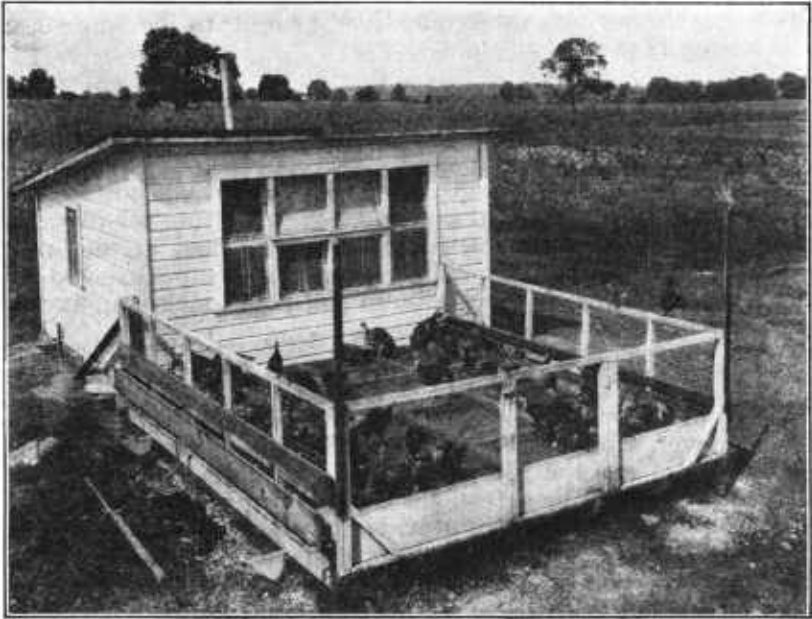


FIGURE 13.—Young turkeys in a colony house equipped with wire-floored sun porch

exact temperature, however, is of minor importance, if the poults are kept comfortable and good ventilation is maintained. All warm points and surfaces except those at the brooder itself should be eliminated. Free access from all parts of the brooder room to the hover must be provided. All corners in the brooding room, especially back of the hover, should be rounded, preferably by using $\frac{1}{2}$ -inch mesh poultry wire. A fence of the same material should be set up around the hover for the first two or three days until the poults become accustomed to their surroundings and learn to return to the source of heat. Low, flat roosts 3 inches wide may be placed in the brooder house when the poults are from 2 to 3 weeks old to encourage them to begin roosting at an early age. This provision lessens the danger from night crowding. The front roost should be 6 inches above the floor and each of the others a few inches higher than the one in front of it.

Thoroughly clean and disinfect brooder houses and equipment used for turkeys at the end of each brooding season or oftener if disease occurs. First clean the house thoroughly and burn all litter and droppings or haul them to land that is not to be used for poultry and from which there will be no drainage into the turkey range. Then scrub the floor and sides of the house, if it is of board construction, with boiling-hot lye solution (one-third of a can to a pail of water) and allow them to dry out. Next thoroughly spray the entire inside of the building with a 3 or 4 per cent solution of cresol compound or a 5 per cent solution of carbolic acid. Give the same treatment once a year to the quarters occupied by the breeding stock. The "fire gun," a large gasoline torch which involves the blow-torch principle, has proved to be valuable in disinfecting if properly used.

LITTER

It is very difficult to brood turkeys successfully with ordinary types of litter. Gravel and sand give best results. Straw or hay may cause a stunting of growth and a high mortality. Many growers have been successful in using, as a substitute for litter, wire mesh stretched tightly a few inches above the floor of the brooder houses. A wire-floored brooding compartment supplemented by a clean outside run or a gravel-covered sun porch makes an excellent combination for brooding turkeys.

EARLY DEVELOPMENT

The poults, when first hatched, are covered with soft down. Very soon, however, wing feathers begin to develop and when the poults are 2 weeks of age the feathers are long enough to cover the back, sides, and rump. These feathers usually protrude in a seemingly unnatural manner which, however, is normal, at least for artificially brooded poults. When the poults are about 10 days old feathers begin to appear where the wings join the body, and in about three weeks the tail feathers begin to appear. From then on feather growth is rapid, and when the poults are 2 months old they are well feathered.

The head and upper part of the neck of a mature turkey are red and covered with fleshy protuberances called caruncles. Until the poults are about 4 weeks of age there is no trace of red on the head or neck. About the fifth week the caruncles begin to appear, and by the seventh week they begin to extend down the neck. The appearance of caruncles in the poults is termed "shooting the red," a natural process of no particular significance. On the top of the head of both males and females a fleshy protuberance develops into what is called the "dew bill"; on males it is larger and more elastic than on females and can be expanded or contracted at will.

The sex of poults can be distinguished at a relatively early age by the earlier appearance of a tuft of hairs on the breasts of males between 3 and 4 months old. The appearance of this tuft is preceded by the growth of a small, fleshy protuberance. The tuft usually does not appear on the breasts of females until they are about 1 year old. On males the hairs of the tuft are much longer and coarser

than those on females. On well-fed Bronze turkey poults the mature breast feathers appear at 12 to 14 weeks. Sex can be distinguished at that time by examining these new breast feathers. Those of the males are bronze-black with no white, whereas those of the females have a narrow white tip.

MARKING

When large numbers of turkeys are raised, it is advisable to adopt some system of marking the poults that enables the grower to keep a record of the age and breeding of the different broods, and that is of assistance in selecting early hatched birds for breeding purposes. Such a system also makes it possible to separate the poults from special matings from the rest of the flock or from neighboring flocks. The poults may be marked by clipping their toes or by punching holes in the webs between the toes or slitting these webs. Different webs may be punched or slit for different broods, and thus provide a record of all turkeys raised from different matings. Wing bands, such as are used in banding baby chicks, may also be used. Extra-heavy, aluminum, clinch pigeon bands are well adapted for turkeys. The bands are first made round and clinched, then slipped over the baby poult's toes and flattened so that they will not come off, but at the same time will allow for some growth of the leg. When the poult is about 4 weeks old the band should be transferred to the wing by unclenching and inserting it into a hole made in the middle of the web between the first and second joints of the wing and about one-fourth inch from the edge. The band is again clinched and made round so that it is not easily flattened and its lettering can easily be read. Turkeys may be tattooed on the wing for identification in case they are stolen or stray away with other flocks. When the breeding turkeys are selected as they approach maturity, heavy wing bands or heavy permanent leg bands may be used if the birds were not marked at an earlier age.

FEEDING

Success in turkey raising depends not only on the kinds of feed given the young poults, but also on the manner in which they are fed. Unwholesome feeds and improper methods of feeding, especially if the poults are closely confined, have caused many failures. Some difficulty may be experienced in getting artificially brooded poults to eat, as a young poult is much less active than a chick, but if numerous troughs are provided there should be no serious trouble from this cause. Dipping the beaks of backward poults in milk, or feeding bright, shiny grit may induce them to eat. Poults kept under free-range conditions seldom need this special attention. The same rations and methods of feeding used for baby chicks are often used for raising young turkeys. Also, many mixtures are prepared especially for turkeys. Milk in some form is very desirable in their feed. After the poults are from 6 to 8 weeks old they may get much of their living from a good range, but the use of additional feed, preferably a balanced, dry mash, will give better growth and result in early maturity and greater returns above feed cost. It is good practice to feed poults regularly every evening in a clean feeder. This also serves to train the birds to return nightly to their proper roosting quarters.

In natural brooding the turkey hen, while confined to the coop, should be given some tender, green feed and, twice a day, a mixture of grain, such as equal parts of corn, wheat, and oats. Water and gravel or grit should, of course, be kept before her all the time. In feeding the hen and her brood, it is advisable to feed the poults outside the coop and the hen inside, in order to prevent the hen from eating the feed intended for the poults.

For the first 24 hours after hatching, poults require no feed, the yolk of the egg which they absorb before hatching being sufficient to

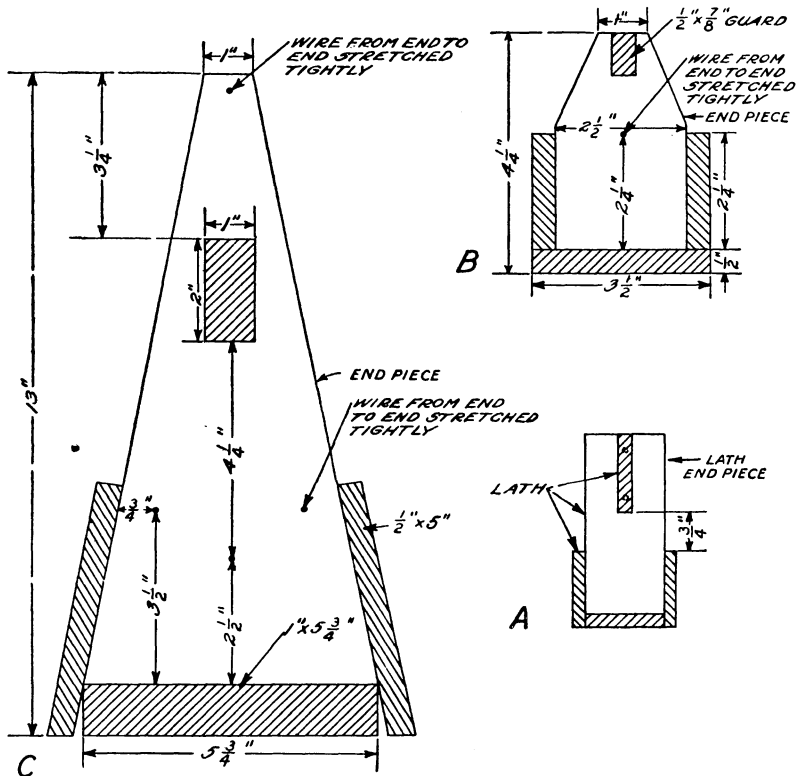


FIGURE 14.—Cross section of trough feeders for turkey poults of various ages: A, Lath feeder for first week; B, feeder for second to fourth weeks; C, feeder for fifth to twelfth weeks

maintain them for that length of time. However, as soon as they are put into the brooder house or with the hen they should be fed. If they are not fed for the first day or two they should be kept in a darkened coop or incubator. However, leaving the poults in the incubator for only 24 hours and feeding them as soon as they are removed to the brooder is now becoming a general practice.

The first feed may be a mixture of finely chopped, tender, green feed, hard-boiled eggs, and dry, starting mash. It is placed on clean boards or in little feeders made of laths as illustrated in Figure 14. It is a good plan to keep the feed before them at all times from the very beginning so that the backward poults will learn to eat and their growth rate will not be retarded. Milk, if obtainable, should

be kept before them in easily cleaned crockery, tin, wooden, or granite-ware receptacles which the poults can not get into or contaminate. After the first few days the green feed may be spread on top of the mash in the feeders. Turkey poults appear to be easily harmed by large quantities of fiber in their feed, hence the selection of green feed is most important. A satisfactory method of providing green feed is to include about 6 per cent of alfalfa-leaf meal in the dry mash until the poults are able to pick it themselves from the range. A better method is to use fine-cut, fresh, green feed for the first two weeks, in addition to the alfalfa-leaf meal in the mash. If fresh, green feed is preferred, use only a tender kind, such as lettuce, young alfalfa tops, young grass, or young, green oat sprouts. Cut the feed very fine, or tie it tightly in bundles so that the birds can pick it.

The following mashes are recommended for raising turkeys when liquid milk is not fed:

Starting mash		Parts by weight	Growing mash		Parts by weight
Ground yellow corn	-----	25	Middlings or ground wheat	-----	36
Middlings or ground wheat	-----	17	Ground yellow corn	-----	20
Dried milk	-----	17	Meat scrap	-----	11
Wheat bran	-----	10	Wheat bran	-----	10
Ground barley or rolled oats	-----	10	Ground oats	-----	10
Meat scrap or fish meal	-----	9	Dried milk	-----	6
Alfalfa-leaf meal	-----	5	Alfalfa-leaf meal	-----	3
Ground oyster shell	-----	2	Ground oyster shell	-----	3
Steamed bone meal	-----	2	Salt	-----	1
Cod-liver oil	-----	2			
Salt	-----	1	Total (protein 19 per cent)	-----	100
Total (protein 20 per cent)		100			

The starting mash should be kept before the poults at all times without scratch grain for the first 12 to 16 weeks, after which the birds are fed the growing mash. Two per cent of cod-liver oil should be thoroughly mixed with the mash during the first 8 to 12 weeks. If freshly cut green feed can be furnished in abundance the alfalfa-leaf meal may be replaced by ground yellow corn. If liquid milk can be fed liberally the dried milk may also be replaced by ground yellow corn. Fish meal is a desirable feed, but it and cod-liver oil should be omitted from the ration for eight weeks previous to marketing time as these products may cause an undesirable flavor in the turkey meat. Scratch grain should be fed with the growing mash, both being kept before the poults at all times. A mixture of grains, such as corn, barley, wheat, and oats, makes a good scratch feed. Either barley alone or corn alone may be used with the growing mash. Not more than about 50 per cent of the entire growing ration should be composed of barley or oats or both.

A simpler starting and growing mash that has given good results may be made as follows:

	Parts by weight
Ground yellow corn	----- 40
Shorts or ground wheat	----- 25
Bran	----- 15
Meat scrap	----- 19
Salt	----- 1
Total	----- 100

This mash may be fed in exactly the same manner and with the same supplementary feed as the mixture previously mentioned. If desired the ground corn may be replaced, when the poults are about 15 weeks of age, with ground barley, ground oats, or a mixture of the two, if plenty of green feed or other source of vitamin A is included in the ration. If liquid milk can be fed liberally reduce the meat scrap to 10 per cent and increase the ground corn by 9 per cent.

Milk, either sweet or sour, or buttermilk is excellent for young poults. Buttermilk seems to be especially beneficial in bringing them successfully through the early stages. It may be kept before them as the only drink or it may be offered in the morning and water used during the afternoon. After the age of about 12 weeks poults can be raised and brought to a good market finish on a ration consisting of only liquid milk, green feed, and whole grains.

Eggs, either fresh or infertile, if boiled for 10 minutes, make excellent feed for poults. The eggs may be ground, shell and all, or crumpled with the hands, and fed with the green feed and mash or spread on top of the dry mash. Four turkey eggs, or six chicken eggs, for 100 poults per day are usually enough of this concentrated high-protein feed.

Grit may be furnished in the form of coarse sand for little poults and fine gravel for the larger birds.

The poults may be put out on the rearing ground when they are from 8 to 12 weeks old. An alfalfa field is an ideal rearing ground and may be used as a permanent, fenced, rearing range divided into two or three sections. Each section is used for one season or two in succession, while the other parts are allowed to rest. With portable houses and fences a method known as the Minnesota plan (p. 31) permits the turkey poults to be moved to a new section every month and to an entirely new plot each year. Land on which no poultry of any kind has run for two years and on which no poultry manure has been spread, may be considered clean ground. The feed should not be put on the ground but in hoppers or troughs which should be moved frequently or set on wire-covered framework to prevent contamination with droppings. It is very important that the drinking water be fresh and clean and that the growing turkeys be kept away from stagnant water pools. Watering dishes should be placed on wire-covered platforms to prevent contamination by the birds perching on the top or sides.

The limited-range method with full feeding, as described, is recommended in preference to free range with limited feeding. However, conditions sometimes demand that free range be permitted and limited feeding practiced. In these cases, when natural feed is abundant, good results can be obtained by feeding the poults, after they are from 8 to 10 weeks old, only once daily, preferably in the evening. Either of the growing mashes previously listed should make a good supplement to range feeds. This extra feed will bring the birds home at night and keep them growing at a reasonably good rate. As market time approaches, scratch grain can be fed more liberally. For turkeys on free range, plenty of water in convenient locations should be provided. It helps to maintain good health and tends to prevent the condition known as "crop-bound." Turkeys which are well fed should make increases in weight comparable to those given in Table 2, which gives the average weights, at 2-week intervals, of 333 birds in an experiment conducted in Montana.

TABLE 2.—Growth weights of Bronze turkey poultts from hatching time to market age

Age, in weeks	Average live weight of—			Age, in weeks	Average live weight of—		
	161 males	172 females	333 males and females		161 males	172 females	333 males and females
	Pounds	Pounds	Pounds		Pounds	Pounds	Pounds
Hatching.....	0.13	0.12	0.12	14.....	7.41	5.51	6.43
2.....	.29	.26	.27	16.....	9.56	6.99	8.23
4.....	.71	.61	.66	18.....	11.74	8.38	10.00
6.....	1.51	1.21	1.36	20.....	13.90	9.59	11.67
8.....	2.58	2.04	2.30	22.....	16.09	10.65	13.28
10.....	3.88	3.00	3.43	24.....	17.96	11.48	14.61
12.....	5.48	4.16	4.80	26.....	18.82	11.91	15.25

FEED CONSUMPTION AND COST OF GROWING

The quantity and cost of feed used in raising a large flock of Bronze turkeys in Montana in 1929 are shown in Tables 3 and 4. These poultts had dry mash and scratch grain before them at all times and were allowed to range on 2-acre nonirrigated lots after 8 weeks of age. The computations were based on local feed prices in Miles City, Mont., in 1929.

The consumption of scratch grain, it will be noted, was very low until the seventeenth week. This suggests that growing turkeys be fed mash only for the first four months and that scratch feed be added about the seventeenth week.

By the end of 24 weeks, when the turkeys were about ready for market, they had eaten 3.8 pounds of grain and mash for each pound of gain in weight. The cost of the feed per pound of gain in 1929 was 10.1 cents for grain and mash and 10.3 cents for grain, mash, and milk.

TABLE 3.—Average feed consumption per bird by growing Bronze turkeys

Age, in weeks	Mash	Scratch grain	Total mash and scratch grain	Milk
	Pounds	Pounds	Pounds	Pounds
1-4.....	0.87	0.16	1.03	1.58
5-8.....	3.65	.22	3.87	1.11
9-12.....	6.70	.61	7.31	-----
13-16.....	10.32	.98	11.30	-----
17-20.....	11.65	3.41	15.06	-----
21-24.....	8.37	8.61	16.98	-----
Total.....	41.56	13.99	55.55	2.70

TABLE 4.—Average feed consumption and cost, in 4-week periods, for Bronze turkeys, in 1929, at Miles City, Mont.

Age, in weeks	Mash and scratch grain consumed per pound of gain	Cost, per pound of gain, of—	
		Mash and scratch grain	Milk
	Pounds	Cents	Cents
1-4.....	2.06	6.0	4.0
5-8.....	2.53	7.0	.9
9-12.....	3.08	7.6	-----
13-16.....	3.50	8.7	-----
17-20.....	4.52	11.0	-----
21-24.....	6.92	16.1	-----

It takes approximately 75 pounds of mash and scratch feed to raise an 18-pound tom to 24 weeks of age and about 50 pounds of mash and grain to raise a 12-pound hen to that age, when the birds get little or no feed from the range.

DEFORMED BREASTBONES

Crooked and dented breastbones in turkeys are common and sometimes cause a considerable loss to growers when the birds are marketed, since a severely crooked or very deeply dented breastbone causes the carcass to be graded as No. 2.

It is generally believed that faulty nutrition causes most of the deformed breastbones, although roosts narrower than 3 inches have been known to cause deformities of this kind. If turkeys are so fed as to keep growing at a normal rate, provided with roosts 3 to 4 inches wide, and have plenty of direct sunlight, there will be few if any crooked breastbones among them. Plenty of green feed and a constant supply of dry mash containing 20 to 22 per cent of a good-quality meat scrap or of dried milk (or a mixture of the two), 1 per cent of salt, and 1 to 2 per cent of cod-liver oil (when direct sunshine is not available), in addition to ground grains, will help to prevent deformed breastbones. The addition of 2 to 3 per cent of steamed bone meal and 1 to 2 per cent of limestone grit or oyster shell as a mineral reinforcement is often recommended. Many growers keep a supply of crushed oyster shell before their birds at all times, but it is better to add 1 to 2 per cent of this ingredient to the mash.

EQUIPMENT FOR RAISING TURKEYS

CONTAINERS FOR FEED AND WATER

During the first three or four weeks after the poults hatch, 2-piece crockery fountains are excellent water and milk containers. When the poults are from 4 to 10 weeks old, shallow tin or granite-ware pans provided with wire or wooden guards are more satisfactory than fountains. From the age of 9 weeks until market age, a supply of running water is preferable. Ordinary water pails set inside the range house on the wire floor, or tubs set outside the fence, with openings in the wire for the birds' heads, are satisfactory. Changing the position of the watering devices every few days or setting them on wire-covered platforms will aid in providing sanitary conditions near the watering places where filth is likely to accumulate rapidly. A water-tight barrel provided with a drip faucet and a trough also makes a good watering device. Suitable equipment for feeding mash and scratch feed is shown in Figure 14.

For the first day or two that the turkey poults are in the brooder, their feed should be scattered on clean, dark-colored boards. Small trough feeders made of lath (fig. 14, A) may be used from the first day in the brooder, and until the poults are a week to 10 days of age. Such feeders are made with one lath for the bottom, two for the sides, small sections for endpieces, and another lath for a guard to keep poults out of the trough. About three feeders for each 100 poults should be provided. For poults from 10 days to 4 weeks old, it is better to use trough feeders made of $\frac{1}{2}$ by $2\frac{1}{4}$ inch boards for the

sides with a top guard or a free-turning reel. Baling wire stretched inside the troughs (fig. 14) aids in preventing waste of feed. It is well to place feeders on a wire platform made of 1-inch mesh, 18-gage wire and 1 by 4 inch boards. Poult 5 to 12 weeks old should have larger trough feeders made of $\frac{1}{2}$ by 5 inch boards for the sides with a top guard of a 1 by 2 inch board topped by a tightly stretched wire, or with a free-turning reel in place of the guard and wire. For poult from 12 weeks old to marketing age the feeders should be even larger.

For inside feeding use a flat-bottomed trough from 12 to 18 feet long, made with a 1 by 10 inch board as a bottom, 1 by 8 inch boards as sides, and with a guard of a 1 by 4 inch center piece topped with a free-turning roller or reel. (Fig. 15.) For outside feeding a similar trough is advisable. It should be divided into two sections each 6 to 9 feet long, set on 2 by 8 or 2 by 10 inch skids covered with 1-inch hexagonal mesh, 16-gage wire, a gable roof and side boards to protect the feed and the birds from sun, wind, and rain. (Fig. 16.) The troughs can be removed to be used as inside feeders and for replenishing the feed. Two 9-foot feeders are sufficient for 150 to 200 birds.

HOUSES AND FENCES

A vermin-proof, weather-proof roosting shelter for growing poult is an important piece of equipment. A square or rectangular structure with a shed or gable roof makes a satisfactory range house. A shed roof is the more easily constructed. Allowing for a wire-floored alleyway to hold the feeders and waterers, a house about 16 feet wide and 25 feet long (figs. 17, 18, 19, and 20) will accommodate 150 growing turkeys to market age; a similar house about 16 by 18 feet is large enough for 100 birds. Feeding and watering can be done inside. For a permanent house, a height of 5 or $5\frac{1}{2}$ feet at the eaves and about 8 feet at the front (or the peak, if gable-roofed) is sufficient. If no alleyway is used, a house 9 by 26 feet containing roosts only should care for 150 turkeys to market age. (Figs. 21 and 22.) With the latter type of house, feeding and watering must be done outside with a covered feeder, as shown in Figure 16. In making a portable house the height may be reduced and the framework may be made of lighter material, equipped with raised wire floor and with roosts, and set on 4 by 8 inch skids.

The house should face south or in a southerly direction, so that the front is not exposed to prevailing winds. Board sides on north and west are desirable. Practically open-air conditions may be obtained by leaving wire-covered openings about 2 or $2\frac{1}{2}$ feet wide across the north and west sides at about the level of the roosts. These openings should be closable by shiplap doors and may be partly opened in warm weather and closed during cold weather and

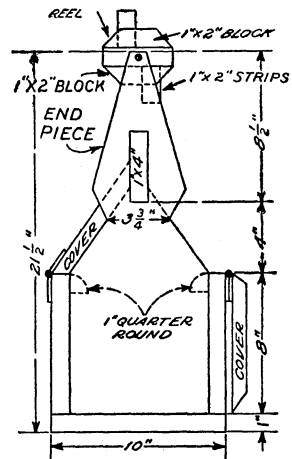


FIGURE 15.—Diagram of end of mash hopper for feeding young turkeys indoors

storms. The east and south sides may be left entirely open except for 1-inch hexagonal mesh of 16 to 18 gage wire and enough boards to give strength to the building and protect the birds from rain-storms.

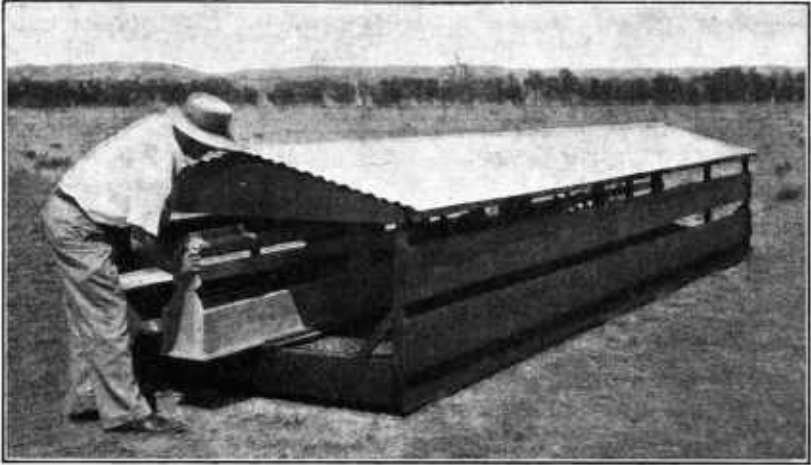


FIGURE 16.—A waste-proof, portable, outdoor feeder with wire floor which prevents contamination from the soil

Roosts should be about 4 inches wide. Materials such as 2 by 4's laid flat make good roosts. Material less than 3 inches wide is not recommended. Roosts should preferably be 24 inches apart (center

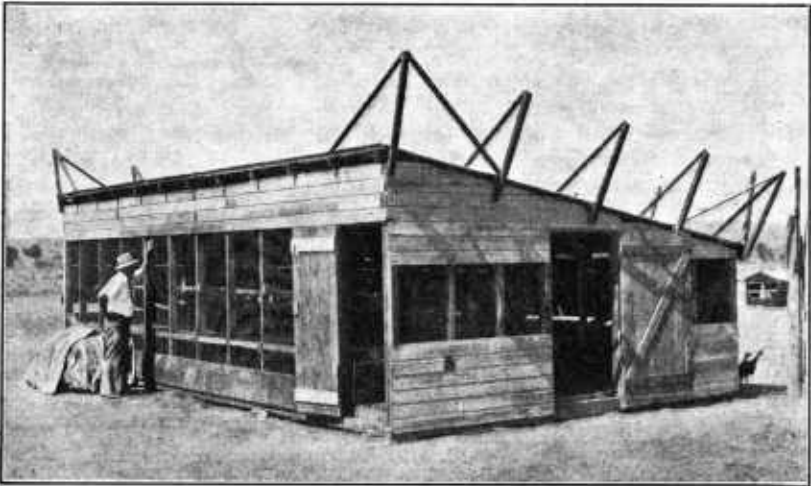


FIGURE 17.—Large range house for turkeys. This type is equipped with a wire-floored alleyway, as shown in Figures 18 and 19

to center) and lengthwise of the building. Those nearest the back wall of the shelter should be the highest, and each of the others about 6 inches lower than the one back of it. This arrangement insures an even distribution of poults on the roosts without crowding.

The space beneath the roosts should be fenced off and covered with 1½-inch mesh, 18-gage wire, to prevent the birds from getting at the droppings. When a wire-floored alleyway is used, removable, vertical panels made of 1 by 4 inch boards covered with 1-inch hex-

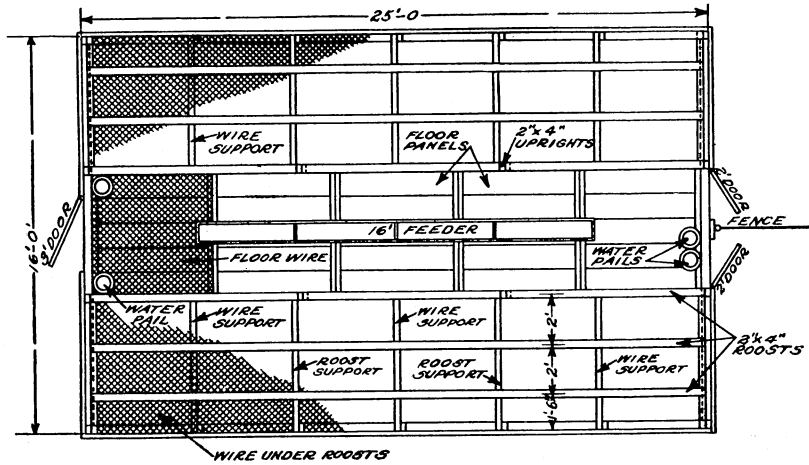


FIGURE 18.—Floor plan of turkey range house with alleyway

agonal mesh, 18-gage wire should be placed directly under the roosts which border the alleyways in such a way as to close the opening between the raised-wire floor and the wire underneath the roosts. In arid or semiarid regions, if the space underneath the roosts and wire floors is entirely inclosed, the droppings may be allowed to accumulate throughout the entire growing season or until sanitary

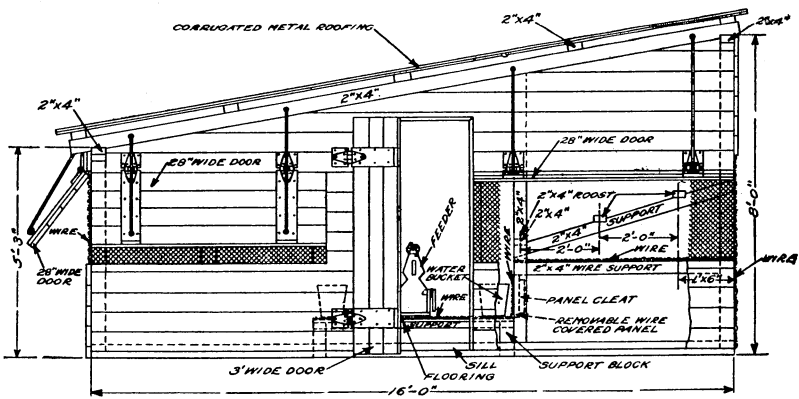


FIGURE 19.—End elevation of turkey range house with alleyway

conditions require that they be removed. In damp climates, however, the droppings should be removed at least every week or 10 days.

Wire floors may be used in the alleyways of roosting shelters to provide a place for inside feeding and watering and may also be used in the outside yards when close-confinement rearing is practiced. A practical method of construction is to make the floor in

removable sections, each about 5 feet square. The framework should be made of 2 by 4's placed on edge with the top edge beveled to present about three-fourths inch of surface, and the center supports may be of 1 by 4's, also placed on edge, spaced 12 to 16 inches apart



FIGURE 20.—Interior of 16 by 25 foot range house showing wire floor and wire under roosts

and laid lengthwise of the alleyway. (Fig. 20.) This frame should be covered with 16-gage, 1-inch hexagonal mesh or chain-link fabric wire. Hardware cloth in a 1-inch mesh made of 14-gage wire is perhaps more satisfactory but is more expensive. The wire may

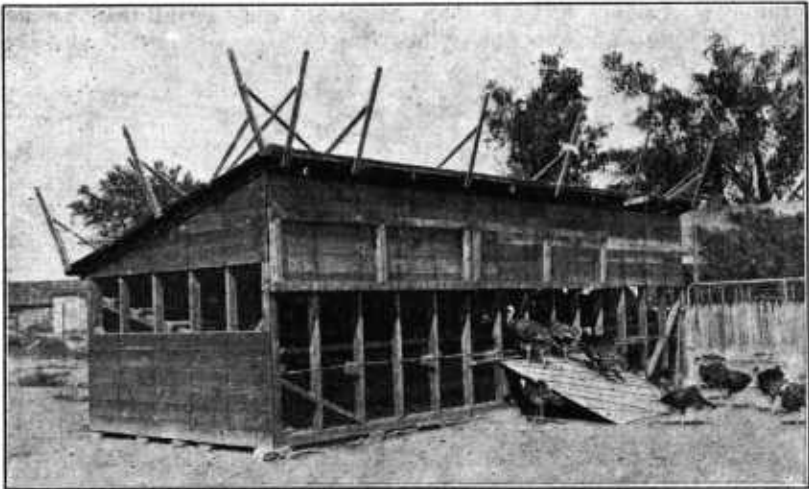


FIGURE 21.—This shed-roof range house will accommodate about 150 growing turkeys to market age. A plan of a similar house with the roosts reversed is shown in Figure 22

be fastened with a 1-inch staple for each strand of wire, but only to the top or sides of the 2 by 4 inch framework, not to the center supports. The sections should be set loosely in the alleyway and held 1 inch apart by nails driven into the sides of the framework.

Supports made of either 2 by 4 or 2 by 6 inch material should be placed on both sides of the alleyway, directly under the outer framework of the panels, and blocked up so as to hold the frames 1 foot above the ground.

Since young turkeys, especially hens, fly well, it is sometimes difficult to keep them in their runways. Clipping the large outer feathers (called primaries) of one wing will do much to prevent the turkeys from flying, but it is usually necessary to put a 3 or 4 foot fence made of 1 by 4 or 2 by 2 inch material and lightweight poultry wire around the edge of the roof of the roosting shelters, on gates, and very often on the fences themselves for 2 or 3 rods out from the buildings. Whenever possible these "antiflies" should be slanted in toward the yard. (Figs. 17 and 21.) Clipping the wings, except in the case of a few of the young hens, is usually unnecessary when antiflies are properly constructed.

A 5-foot fence is usually high enough to confine turkeys except near buildings and over the gates, where the fence should be 8 or 9 feet high. Even a 4-foot fence has been reported as satisfactory by some growers. Steel posts and square-mesh poultry fencing of medium weight make good turkey fences.

RANGE MANAGEMENT OF GROWING TURKEYS

In Minnesota a successful system of moving poults around the colony brooder house has been devised and is giving excellent results. The house is built with a small opening in each side, and a portable fence is so placed that the ground on each side of the house can be used as a small outside run. The birds are allowed to range to the south for from 5 to 10 days; then the house is thoroughly cleaned and the range changed to the west; and so on until the land on all four sides of the house has been utilized. The house is then moved to a clean spot and the rotation is repeated. After the birds are from 8 to 12 weeks old the house is again moved to a clean place. Turkeys may be raised successfully on a small acreage if they are moved to a clean area each month and to an entirely different, clean area each year. As many as 200 to 300 birds may be raised on one-fourth acre under this monthly rotation system.

Other systems of yarding have been devised, but the value of most of them has not been proved experimentally. Some system of soil rotation is necessary on a permanent turkey farm. In dry climates the problem is not so pressing as in humid climates, but nevertheless does exist. For fenced ranges where the semiconfinement method is to be used, the Minnesota plan is entirely satisfactory for small flocks. For large flocks the use of large yards in the double or triple yarding system has given good results. Under this system, after 8 to 10 weeks of brooding, the poults may be put on range, which may be divided into two or three equal parts, and alternated, or may be herded so that they are protected from enemies and kept within the clean area allotted to them each season. The use of portable fences and portable roosting shelters enables the grower to move the entire flock to clean range each season or several times each season. This method is practical where large areas of suitable range are available, so that the birds can be reared each season on land that has not been

used, or on which no droppings have been spread, for the preceding two years. In wet climates it is safer to allow a rest of three or four years. Enough range should be provided so that plenty of growing, green feed is available in each yard at all times during the season. When the same ground is used for a whole season, an acre of grass pasture should provide range and green feed for from 100 to 150 growing turkeys. An acre of alfalfa or clover would probably provide feed for twice that number of birds.

In arid or semiarid sections, during very dry seasons, it is advisable to feed green feed or legume hay in abundance to prevent the turkeys from eating undesirable green feed on the range.

Where the range is limited to small areas of fenced land, the use of a number of permanent range houses set in a row, preferably 200 feet or more apart, in the middle of the range and along the dividing

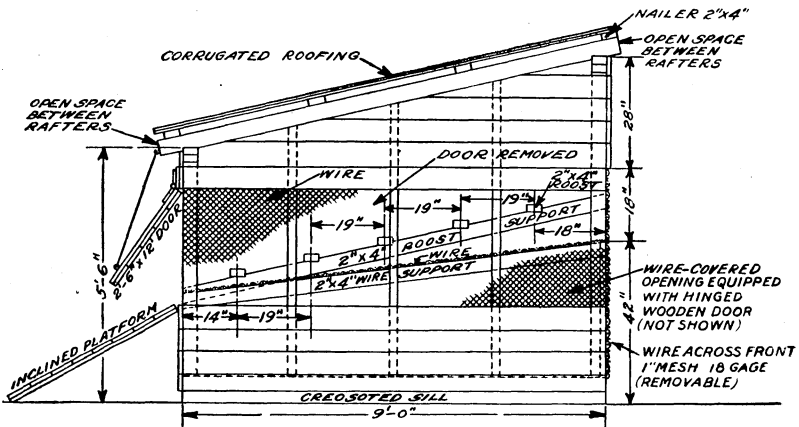


FIGURE 22.—End elevation of range shelter for turkeys. This type is built without an alleyway and measures 9 by 26 feet

fence is a practical method of range utilization. Under this plan the birds can use one half of the range for two years in succession and the other half for two years without the buildings being moved. If individual range lots are desired for each flock of birds, permanent range shelters, each with double or triple yards, are a solution to the clean-range problem. If double yards are used for each house or if the range as a whole is divided into two sections, a rotation of two seasons of use, followed by two seasons of rest, is the best plan. Where three yards for each house can be arranged or where the whole range is divided into three large yards, each yard can be used for a season and allowed two seasons of rest.

Under any system of permanent yards, certain sanitary precautions are essential. Among these are: (1) Select such a location or modify the one available in such a way that there is little or no drainage from the yards that are being used to those that are being rested; (2) each season, or several times each season, remove the accumulations of droppings from the ground around the houses, feeders, and waterers; (3) grade up around each house with fresh earth each season or whenever it is necessary, to prevent water from standing near the buildings; (4) fill in or drain all depressions

so that water does not stand for any length of time anywhere on the range; (5) use antflies, or clip one wing of each bird to keep it from flying into and contaminating the yards that are being rested; (6) prevent traffic by birds or persons in and out of yards that are being rested; (7) move feeders and waterers frequently, or feed and water the birds inside the range shelters on the wire floors, or place the feeders and waterers outside on roofed wire platforms so that the droppings that accumulate near them will not become sources of infection; (8) use contamination-proof feeders and waterers; (9) see that flies do not breed extensively in or near the houses and feeders; (10) in dry climates where the range vegetation is scanty arrange the yards to offset as much as possible the effect of the wind in blowing droppings from yards that are in use to those that are being rested.

When birds are herded on free range some growers move the roosts, feeders, and waterers to clean ground several times each season, whereas others use permanent roosting and feeding quarters and bring the birds back each night. In either case excessive contamination at any one point should be prevented so far as possible.

FATTENING TURKEYS FOR MARKET

In general, the best method of raising turkeys is to keep them growing at a normal rate so that at the age of about 6 months they are in prime market condition, no special fattening period being necessary. Such a method calls for liberal feeding of balanced rations throughout the growing period. A good range will supply a large quantity of feed at very reasonable cost, but not even the best range will furnish enough of the right kinds of feed to produce prime turkeys without supplementary feeding.

In many instances, however, turkey growers believe that it is more profitable to force the birds to forage for their livelihood until a few weeks before marketing time. A good plan for fattening these range-grown birds is to begin about the first of October to feed the birds just enough at night and morning so that they are still a little hungry. The quantity of feed should be gradually increased until they are given all they will clean up three times a day during the week before marketing. A mash alone is an excellent feed for fattening. Almost any mixture of ground grains (not over 40 per cent of which is oats or barley or a combination of the two), to which has been added from 10 to 15 per cent of meat scrap or dried milk, is satisfactory. The mash may be fed wet or dry. Milk is an excellent fattening feed. If plenty of it is fed, no meat scrap or dried milk is necessary in the mash. Some turkey raisers feed scratch grain only, using equal parts of corn, wheat, and oats during the first part of the fattening season and gradually changing to all corn as the weather becomes cooler. This system should be satisfactory if plenty of milk can be fed in addition. Without milk or some other high-protein feed, the results are apt to be unsatisfactory. If too heavy feeding of corn alone is begun before the range turkeys become accustomed to it the disease known as scours often results, especially if new corn is used. Old corn is a much better feed than new corn, but the new crop is safe if it is well matured and dry.

As a general rule, turkeys that have been raised on free range can not be successfully fattened in close confinement. They may be successfully fattened, however, if they are confined to moderate-sized yards containing growing alfalfa or other green crops or stacks of alfalfa or clover hay. There is no advantage in confining turkeys which have been raised in semiconfinement to smaller quarters for fattening.

MARKETING TURKEYS

The marketing season for turkeys is usually very short, extending from the middle of November to the latter part of December. Many turkey raisers sell their birds alive to poultry dealers, who either dress them or ship them alive to city dealers. In sections where turkeys are grown in large numbers, as in Texas, dressing plants have been built by poultry dealers who buy the birds alive and dress them for the various city markets. In such sections practically all the turkey raisers sell to these dealers, who send buyers into the country to gather up droves of several hundred birds by visiting every farm, weighing and buying any turkeys that are for sale. To avoid the shrinkage caused by long drives, motor trucks are being increasingly used. Large shipping coops are sometimes used, and specially built bodies are sometimes provided for the trucks that haul the turkeys. As soon as possible after reaching the dressing plant the turkeys are killed, dry picked, cooled, and packed in barrels or boxes for shipment.

Farmers near the city markets often dress their turkeys and sell them direct either to the consumer or to the city dealer. In some sections an event known as "turkey day" is held shortly before Thanksgiving. On the day before turkey day every grower in the neighborhood kills and dresses his marketable turkeys and the following morning takes them into town, where they are sold at auction. In territory adjacent to large cities marketing both live and dressed birds at roadside stands has become common.

WHEN TO MARKET

Experiments with Bronze turkeys have indicated that well-fed, young birds of this popular variety are marketed to best advantage at from 24 to 28 weeks of age, if they are in good flesh and reasonably free of short pinfeathers. If they are kept longer than 28 weeks the cost of maintenance and gains, and the extra labor of their care, cause the costs of production to rise rapidly. Twenty-six weeks seems to be the best age for marketing full-fed Bronze turkey toms. Twenty-four weeks is a more profitable age if the birds are ready for market then, as is often the case with the young hens, which mature quicker than the toms. Data obtained on more than 600 birds at the United States Range Livestock Experiment Station at Miles City, Mont., show that at 24 weeks of age the feed cost of producing live turkeys was 1 cent per pound lower than at 26 weeks of age, and 2.5 cents per pound lower than at 28 weeks. Besides this cost the extra labor in caring for the birds, often during disagreeable weather, must be considered.

Another significant marketing factor is the fact that the smaller turkeys are in the best demand and therefore bring the best prices

in November and December. After the first of the year the demand for the larger turkeys increases, so that there is but little difference between prices paid for small and for large turkeys. Small birds are preferred for family consumption, hence there will always be a demand for small, prime birds, and this demand may increase as turkeys become more generally used throughout the year.

SELECTING BIRDS FOR MARKET

Practically all turkeys that are full fed will be ready for market at 26 weeks of age, and in many cases at 24 weeks, depending on sex, variety, feeding, and weather. However, in the case of range birds on limited feed the grower probably can afford to hold his turkeys longer than 26 or 28 weeks, if necessary, because the feed costs were low during the growing period. It is, of course, very important to market only turkeys that are in good flesh and reasonably free from small pinfeathers. Sufficient protein and minerals in the feed during the fall months are essential to proper growth and economical gains as well as to proper feather development. A prime turkey, especially a young one, is not expected to be excessively fat, but it must have an even covering of fat so that the skin appears white or yellowish white rather than dark or bluish. The breast must be meaty and the whole body comparatively free from small pinfeathers, bruises, and abrasions. Great care should be taken, therefore, not to allow the birds to bruise themselves by flying or running against obstructions; they should be handled quietly and not frightened.

WITHHOLDING FEED BEFORE SLAUGHTER

Birds with feed in their crops are usually graded as No. 2 and sold at a lower price because feed in the crop spoils readily, and also detracts from the appearance of the carcass. Crops will be empty if mash and scratch feed are removed at dusk on the evening before slaughter. If the birds are kept without feed for more than about 18 hours they may fill up on litter, droppings, or feathers, and thus defeat the main purpose of withholding feed. This applies especially to old hens. If the birds are not to be killed until evening, give them a light feed of mash in the morning.

KILLING AND PICKING

When the bird is ready to be killed, hang it up by the feet, holding its head in one hand and taking care not to compress the veins in the neck. Open the mouth and cut the jugular vein well back in the throat, just below the base of the skull, with the point of a sharp, narrow-bladed knife. As soon as profuse bleeding begins, thrust the knife up through the groove in the roof of the mouth and into the brain at the back part of the skull. When the brain is pierced, the bird is rendered unconscious. It usually gives a peculiar squawk, the tail feathers spread, and all the feathers are loosened by a quivering of the muscles. If two persons work together in picking, one of them should hold the bird to prevent it from struggling too violently while the other does the sticking and bleeding. After bleeding begins, both persons can proceed with the picking. The bird's wings should never be locked, as this often results in their

being broken, a serious market defect. In dry picking it is essential that the feathers be plucked immediately, and if the bird has been properly stuck they come out very easily. First remove the tail and large wing feathers and then the body feathers. Pull out all feathers but do not rub them off, as this injures the skin and often lowers the grade. Dry picking can best be learned by personal instruction. Further information on killing and marketing turkeys is given in Farmers' Bulletin 1694, Dressing and Packing Turkeys for Market.

Clean-picked turkeys are now preferred, but the single row of short fan feathers on the last joint of each wing may be left. Leave no feathers on any other part of the body. Remove all pinfeathers, especially from the breast. After picking and chilling the birds, cover the heads with head wraps made of heavy brown paper, preferably waxed on one side to prevent blood soaking through and smearing the carcasses. Whenever the skin is torn, sew it neatly with white thread.

When birds have been killed with feed in their crops, remove the entire crop. Through a 2 or 3 inch slit in the neck, beginning where the neck joins the body, the crop can be completely loosened and withdrawn. Then sew the opening with No. 40 white thread. Turn in the edges of the skin so as to make a neat job that will not be noticeable when the bird is put on the market.

According to data on more than 500 full-fed Bronze turkeys, killing and picking resulted in a loss of about 9 per cent of weight for large birds and 10 per cent for small birds. The turkeys were weighed both before and after they were killed and picked and again after they were cooled overnight. The larger birds had the lower shrinkages and therefore the higher dressing percentages. The weight loss of dressed turkeys while chilling overnight is very small, only about one-sixth of 1 per cent. Therefore practically all the loss in weight that occurs during picking and chilling results from the loss of blood and feathers. The weight loss of turkeys during the overnight period just before slaughter when they received no feed was about 4 per cent.

COOLING

Hanging the birds by the legs for 12 hours or more or laying them on their backs on a clean surface where the indoor temperature ranges from 23° to 35° F. will properly chill the carcasses. They should be thoroughly chilled but not frozen, since frozen birds can not be packed without great waste of space. In mild weather it is often impossible to cool the carcasses properly without the use of refrigeration or ice water. Cooling in water spoils the appearance of dry-picked carcasses and should be done only as a last resort. A good thermometer is an indispensable part of the chilling equipment.

PACKING

Boxes and barrels are generally used for packing dressed turkeys. Individual producers, as a rule, use barrels, though many birds come to market in miscellaneous types of containers. Packing in barrels, however, is easier and barrels are usually cheaper, considering the number of birds they will hold. For large hens and toms a large barrel such as is used for salt or sugar is necessary. Line it with white or brown wrapping paper or common white parchment paper.

Lay the birds with their backs against the sides of the barrel. When the barrel is full, slip off the top hoop, place a piece of clean burlap over the top, and replace and re nail the hoop over the burlap.

Boxes are commonly used for packing turkeys and are greatly preferred by the trade and by organized pools. In box packing, the double-layer side pack of 12 birds per box and the single-layer pack of 6 to 14 birds, depending upon their size, are commonly used. The boxes are usually large enough to hold from 10 to 12 medium-size birds. (Fig. 23.)

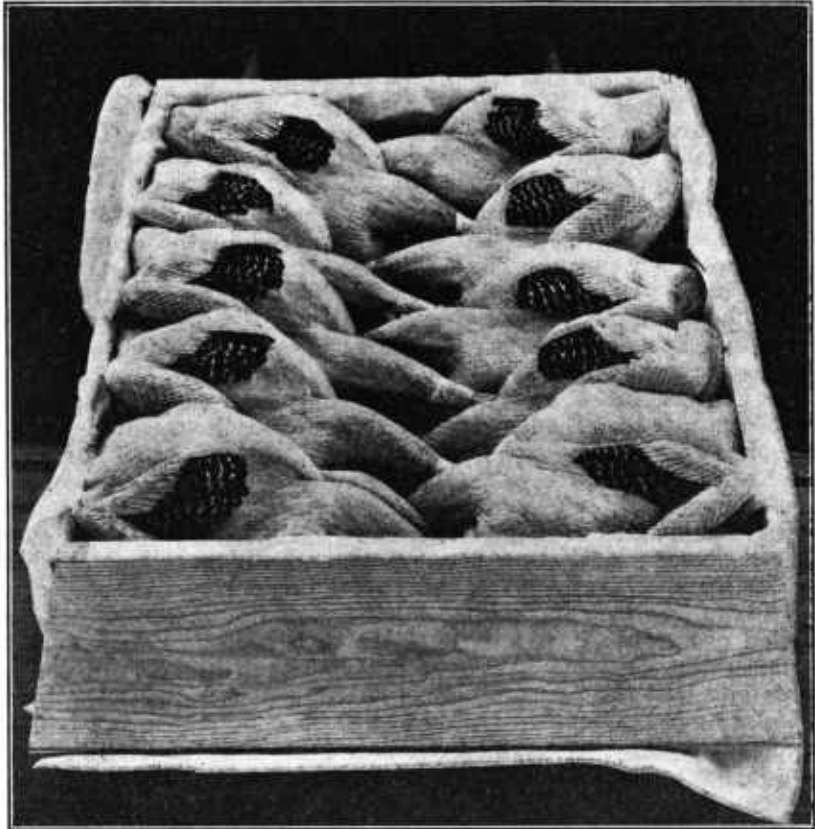


FIGURE 23.—Single-layer box of 10 turkey hens

There is considerable risk for the producer who does not have access to proper refrigerating facilities for shipping dressed turkeys during warm weather. If the birds can not be marketed in cold weather, it is safest to sell them alive, as losses from improper cooling of dressed turkeys and from exposure to warm weather during transit are likely to occur. In some instances it may be feasible to pack the dressed birds in barrels with cracked ice between layers and at each end of the barrel. A top layer of ice placed between two layers of burlap tacked securely over the top of the barrel is desirable. After the internal temperature of the birds is reduced to 36° F. or lower they should be sent to market immediately.

DRESSED-TURKEY GRADES

Grading systems for dressed turkeys differ somewhat in different markets but in general are similar except where the United States grades are used. The United States grades are more comprehensive than other systems and are intended to satisfy the demands of the consumers more fully.

The old systems of grading consist in buying dressed turkeys in two or three grades and selling them the same way except that sometimes the birds within the top grades are divided into subgrades based on weight and sex. The No. 1 grade under this system usually consists of young toms weighing 12 pounds or more and young and old hens weighing 10 pounds or more. For this top grade the birds must be well finished and free of serious tears, bruises, and severely crooked breastbones. The crops must be empty and the carcasses reasonably free of pinfeathers and reasonably well bled. The No. 2 grade includes all old toms and such young toms, young hens, and old hens as are too light for the No. 1 grade. The No. 2 grade also includes turkeys with severely crooked breastbones, broken wings, bad blemishes, bad tears, bad abrasions, feed in the crops, many pinfeathers, poor bleeding, and thinness of flesh. The No. 3 grade includes birds not good enough for the No. 2 grade but still fit for food. These are culls that never should have been marketed. The No. 3 grade is not always used, since turkeys of this kind are often rejected by the buyers.

The United States Government grading system was developed and is sponsored by the Bureau of Agricultural Economics, United States Department of Agriculture. Under this system as now used there are four grades: U. S. Special, U. S. Prime, U. S. Choice, and U. S. Commercial. Each grade is subdivided into four classes according to age and sex of the birds.

These classes are: Young hen, young tom, old tom, and old hen. The quality specifications for individual birds apply to each class with due allowance for fleshing condition characteristic of its sex. Detailed descriptions are provided for each grade. For the U. S. Special grade it is required that turkeys have broad, full-fleshed breasts and that the carcasses be fully covered with fat. The birds must also have been carefully dry picked or semiscalded and be free from bruises, skin tears, and broken joints. For the U. S. Prime grade it is required that birds be well fleshed and well fattened, but they may have slight imperfections such as scattered pinfeathers, slight flesh or skin abrasions, and disjointed but not broken wings or legs. To grade U. S. Choice, turkeys must have fairly well-fleshed breasts and carcasses fairly well covered with fat. These birds need be only fairly well dressed and may have slight flesh or skin bruises, small skin tears, or larger sewn-up tears, and one broken leg or wing. Turkeys not meeting these grade requirements, including birds poorly fleshed, poorly bled, or slightly deformed, but suitable for food, make up the lowest or U. S. Commercial grade.

When graded and packed for market turkeys are further graded as to size, birds of similar weight being placed in the same container, which is labeled according to the grade.